ENERGIZING ETHERNET Will the Rapid Spanning Tree Protocol make Ethernet metropolitan networks more resilient? Page 10.

UNIX FORGES AHEAD Vendors prep the operating system for even heavier duty tasks. Page 20.

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NetworkWorld

August 6, 2001 Volume 18, Number 32

The network portal: www.nwfusion.com

Happy anniversary to the PC

As the IBM PC turns 20, Michael Dell and others reflect on their first desktop computers.

PAGE 17

Auction ACTION

Online bids for net gear reap big savings.

BY PHIL HOCHMUTH

Kurt Anderson does a lot of buying on eBay. "The key is to never be in a panic," he says. "Instead of getting into a bidding war, I'll wait and look around ... and eventually those jewels will come along."

The "jewels" in this case are not antique tea sets or first-edition Twain novels. They're Cisco routers, Compaq servers and 3Com Ethernet switches. Anderson, president of Honeycomb Internet Services, a Minneapolis Web hosting firm, is one of many network professionals who swear by online auctions as a way to buy good network gear on the cheap.

See **Auction**, page 14

MICHELLE BARBERA

Experts call MPLS bad for 'Net

VPNs based on Multi-protocol Label Switching said to be risky. Backbone mgmt. challenges also cited.

BY CAROLYN DUFFY MARSAN

Two prominent Internet researchers from AT&T Labs are among a growing number of experts raising red flags about Multi-protocol Label Switching, a next-generation traffic engineering technology backed by network industry leaders such as Cisco, Juniper Networks and AT&T itself.

The researchers — security guru Steve Bellovin and network operations expert Randy Bush — say MPLS create serious network management challenges for Internet backbone providers. Even more dire are their warnings about potential security and privacy problems for companies that deploy MPLS-based VPNs.

MPLS VPNs are a "great way to sell routers, but they greatly complicate the core of the Internet," Bush says.

"Most security holes are caused by human error. With MPLS VPNs, there's a potential for a network administrator doing the provisioning wrong and losing the privacy of the communication," Bellovin says, pointing out that MPLS VPNs do not automatically encrypt data.

Bush and Bellovin hold leadership positions in the Internet

See **MPLS**, page 61

"MPLS VPNs have very bad failure modes. The end points are set up by the service provider so the corporate customer doesn't have control."

Steve Bellovin, an engineer with AT&T Labs and a member of the IETF's Internet Architecture Board

Faster wireless LANs may prove a bargain

BY JOHN COX

Even before significantly faster wireless LAN products hit the market, the cost of that equipment is said to be plummeting.

Surprised analysts and vendors are now saying that 54M bit/sec wireless products that support the 802.11a standard, which are scheduled to start shipping by year-end, are likely to be priced close to what existing 11M bit/sec, 802.11b LANs sell for today.

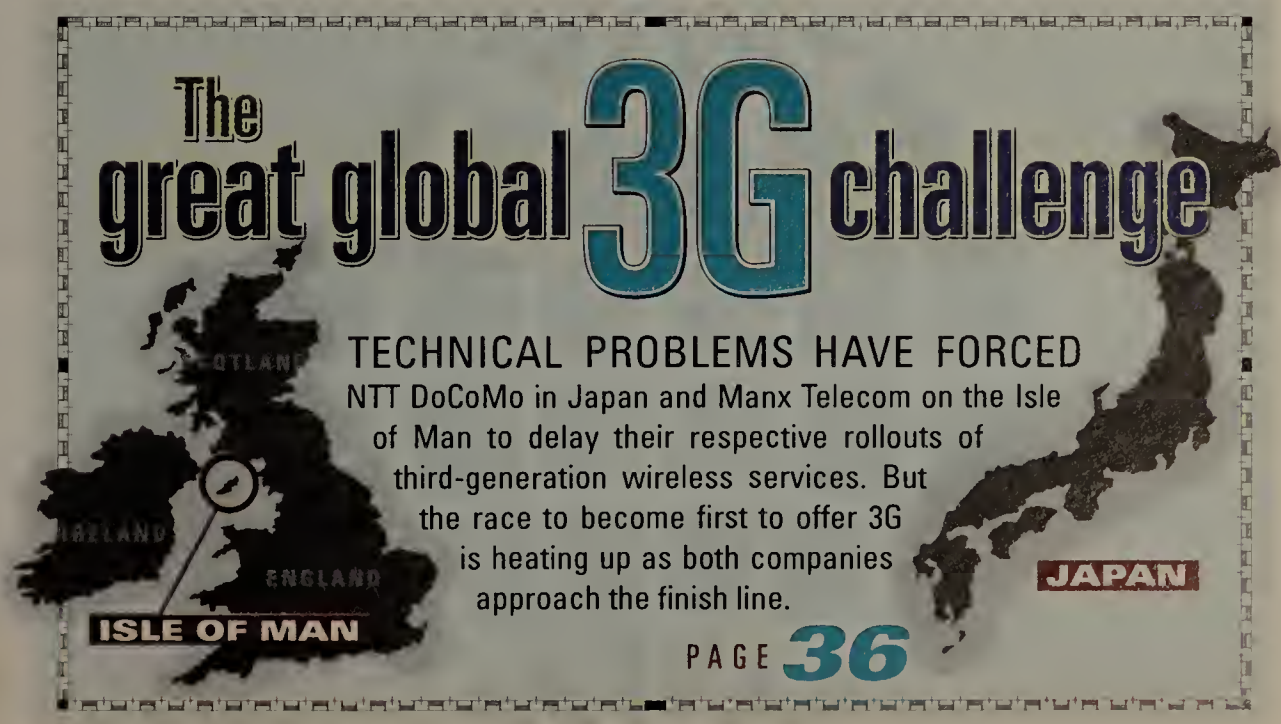
That means about $150 to $200 for client interface cards, and between $700 and $1,400 for access points.

Only a few months ago, the newer products were projected to cost nearly double their current counterparts. The shift could trigger big spending in corporate accounts, some analysts say.

"With the lower prices, we can expect very rapid acceleration in wireless LAN sales," says Craig Mathias, a principal with wireless consultancy Farpoint Group. "It's quite remarkable."

Most wireless LANs shipping today are based on the first

See **Wireless**, page 12



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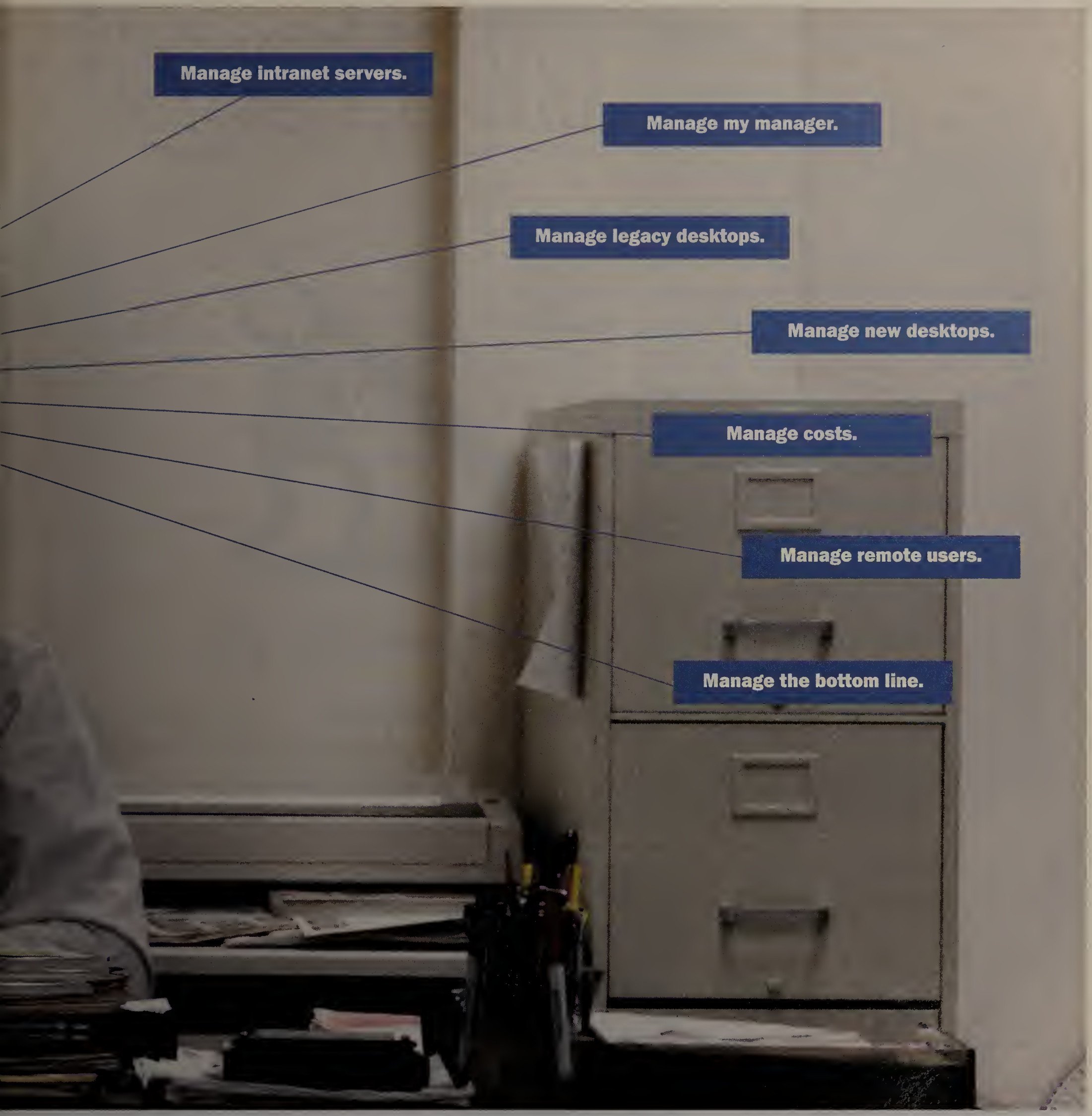

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AUGUST 6, 2001

Digex CED Mark Shull discusses WorldCom experience.

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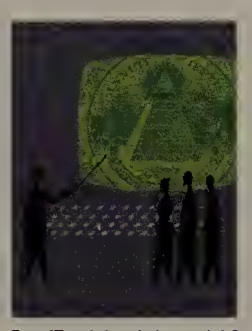
Dual-chip architecture meets mobile devices' power needs.

Page 31



Free IT training: Is it worth it?

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FEATURE:
Mark Briers, 3G project leader for Manx Telecom, will be able to sit in the stands at a sporting event and **PLACE BETS** without leaving his seat, once the new **WIRELESS SERVICE** he is working on becomes a reality. **PAGE 36**

REVIEW: Hewlett-Packard's new 2U server **PACKS** a **BIG PUNCH** in a small package. **PAGE 41**

REVIEW: If your network **RELIES** on **PASSWORDS** as a first line of defense, then MDD's Password Bouncer is a **GREAT WAY** to ensure your end users select passwords that are difficult to crack. **PAGE 44**

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FORUMS

Is "user" a four-letter word?

Everyone has an opinion on this topic. Are IT staffers guilty of such heinous crimes as geek speak, impatience and the inability to admit defeat? Or is the end user being a baby? Add your thoughts. **DocFinder: 5428**

A forum within a forum

There's been some new activity in the Ask Jack Messman forum. Seems there is a brouhaha over Client 32. You got problems? Two of our forum regulars claim they don't know what you're talking about. **DocFinder: 5429**

DOWNLOADS

Our Downloads pages link you to scores of demo, evaluation and free software for network managers. If you haven't been here in a while check out what's new.

Instant messaging

E/pop is an instant messenger that includes chat, voice conferencing, application sharing and status messages. It supports Citrix and NetWare, and runs on Windows 9X and NT/2000. **DocFinder: 5431**

Storage network management

San Navigator provides vendor-and-platform-independent management through SAN environments. **DocFinder: 5432**

XML

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More on the PC

Download a PDF timeline on the 20-year history of the PC. **DocFinder: 5440**

CARUSO'S CACHE

The best of the NetFlash daily newsletter

Have dial-up modems reached their limit?

In a follow-up to her story last week on the latest modem standard, *Network World's* Denise Pappalardo examines just how far modems can go. It turns out that even with the ITU V.92 standard, modems could still be faster — theoretically. **DocFinder: 5446**

Reborn Code Red starts slowly, gains speed

Some argue that too much hype surrounded the re-emergence of the Code Red worm, which hasn't been as damaging as predicted. However, others point out that the number of infected machines is steadily growing. **DocFinder: 5447**

Court rejects Microsoft, DOJ requests

The U.S. Court of Appeals for the District of Columbia has basically told Microsoft and the U.S. Department of Justice to quit whining and go back to the lower court, like the appeals court said last month. **DocFinder: 5448**

Cisco Web translation appliance targets PDAs

Cisco unveiled a product for translating Web pages into a format digestible by wireless devices. The move is an attempt to address the growth in PDAs as access devices. **DocFinder: 5449**

NOCpulse ups its Command Center

The newest version of NOCpulse's Command Center tracks network devices and applications, in addition to Web site performance. **DocFinder: 5450**

— Jeff Caruso, managing editor, online news

Sign up for this e-mail newsletter online. DocFinder: 3850

COLUMNISTS

Home Base

Footing the cost for telework tools

Net.Worker columnist Jeff Zbar discusses Siemens' telework policy. **DocFinder: 5441**

Bleeding Edge

Open source IM

Edge columnists Daniel Briere and Beth Gage bring to light some big issues for enterprise IT managers when it comes to using instant messaging. **DocFinder: 5442**

View from The Edge

The lowdown on Lucent

Edge Managing Editor Jim Duffy writes on one of the most rapid and dramatic downsizings in American corporate history. **DocFinder: 5443**

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NEWS BRIEFS, AUGUST 6, 2001

NSA outsources $2B net project

The National Security Agency has awarded a $2 billion, 10-year contract to a joint venture called the Eagle Alliance, led by systems integrator Computer Sciences, to manage the NSA's internal networks. As members of the Eagle Alliance, General Dynamics will provide the telephony and network LAN components, and Keane Federal Systems will provide applications and their management. Other companies that are part of the venture include ACS Defense, BTG, CACI, Compaq, TRW, Windemere, Fiber Plus, Verizon and Superior Communications. The contract, dubbed Groundbreaker, marks the first time the NSA has outsourced its internal networks to management by outside contractors.

AT&T Labs debuts text-to-speech

AT&T Labs last week announced its first commercial product: a human-sounding text-to-speech engine geared toward corporate call centers and messaging systems. AT&T Labs released its Natural Voices Text-to-Speech software as part of a broader initiative to commercialize more of its technology and intellectual property. Besides computerized speech, other areas of expertise at AT&T Labs are networks, Internet protocols, data mining and communications services. AT&T Labs' Natural Voices Text-to-Speech software has attracted 12 beta version customers, including Benetech, a nonprofit organization that develops technologies for people with disabilities. AT&T also plans to use the technology to voice-enable its own services.

Rhythms files for bankruptcy

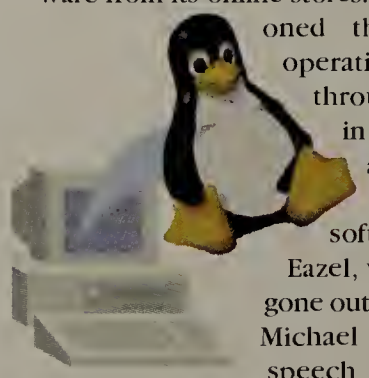
DSL provider Rhythms NetConnections filed for Chapter 11 bankruptcy protection last week, about four months after officials revealed the company was trying to reorganize in an attempt to survive. Rhythms plans to use the Chapter 11 process to reorganize its operations. If reorganization proves impossible, the company will begin auctioning off its assets. Of the three national DSL providers, Rhythms is the second to declare bankruptcy. NorthPoint Communications declared bankruptcy earlier this year. Although some of that firm's assets were acquired by AT&T, its customer accounts were not purchased and had to be transferred to other DSL providers. Many customers had DSL service interrupted, and others who were unable to move to another provider lost service altogether.

Ricochet fails to bounce back

Metricom is closing its doors. The service provider that offered its Ricochet wireless data services to business users and consumers is officially out of business. The service is scheduled to be turned off Aug. 8. This move not only leaves Metricom customers without high-speed wireless data access, but also WorldCom users. WorldCom has been reselling Metricom's service since last year. WorldCom also owns 50% of the wireless service provider and claims it is owed $350 million.

Dell drops Linux from the desktop

Dell has quietly stopped offering the Linux operating system as an option on its desktop and laptop PCs, saying low demand forced the Linux advocate to pull the software from its online stores. Dell has championed the open-source operating system through investments in companies such as Red Hat and Linux desktop software maker Eazel, which has since gone out of business. CEO Michael Dell gave a speech at the LinuxWorld conference last year in San Jose, where he remarked that "the only thing growing faster than Linux is Linux on Dell." While the company has seen strong sales of Linux on workstations and servers, it has sold few desktops and laptops this year loaded with Linux, says a Dell spokeswoman. The vendor dropped Linux from its PCs and laptops about six weeks ago but did not announce the move publicly, she says.



RSA snaps up Securant

RSA Security signed an agreement with access-management software vendor Securant Technologies to purchase the firm for $135.6 million in an all-cash deal. The privately held San Francisco firm competes against Netegrity, Oblix, Tivoli Systems and Entrust. The purchase follows on the heels of RSA's decision last month to lay off 8% of its workforce and take a $3 million to $5 million restructuring charge.

IETF puts the brakes on IKE

The Internet Engineering Task Force says the protocol widely used to set up VPN tunnels is potentially unsecure and work on extending its use should halt. Administrative groups within the IETF have put a temporary moratorium on extensions to Internet Key Exchange (IKE). The decision rests in part on IKE security flaws identified in a 1999 paper by William Simpson, a consultant with Computer Systems Consulting Services. These flaws include the possibility of swamping a server with a flood of requests to initiate security sessions and sending apparently valid packets that propose security associations with the intent of chewing up processing power by having the server calculate unnecessary security keys.

Messaging vendors rally around SIMPLE protocol

BY CAROLYN DUFFY MARSAN

An emerging communications protocol called SIMPLE is the front-runner to become the standard method for sharing online presence information and instant messages across the Internet, thanks to backing from market leaders AOL Time Warner and Microsoft.

Having the marketplace agree on the telephony-oriented SIMPLE protocol will encourage corporate use of instant messaging, supporters say. Industry use of instant messaging has been hampered by interoperability issues.

"The fact that AOL and Microsoft are moving in the same direction is good for everybody," says Neil Starkey, CTO at Lotus, the leading provider of corporate instant messaging applications with its SameTime software.

Starkey says most SameTime users support instant messaging internally for customer service and call centers. Once an industry standard is chosen, these companies can extend online presence and chat applications outside their networks to customers, suppliers and partners over the Internet.

"It all depends on getting an open standard in place and making sure that [the standard is] commercially viable," Starkey says.

The IETF is developing SIMPLE, which stands for SIP for Instant Messaging and Presence Leveraging Extensions. SIMPLE is based on the Session Initiation Protocol, a signaling protocol used to establish Internet telephone calls, multimedia conferences, chat sessions and interactive communications.

SIMPLE is one of three approaches to instant messaging proposed to the IETF, which has been struggling to reach consensus in this area for several years. The alternatives — Presence and Instant Messaging, and Instant Messaging Exchange Protocol — have fewer and less visible supporters than SIMPLE.

"SIMPLE is the direction the whole industry is moving toward for a standard-based instant messaging solution," says Jonathan Rosenberg, one of the authors of SIMPLE and the chief scientist at Dynamicsoft, which sells a SIMPLE-based software developers kit to service providers. "The winner is obvious."

AOL's recent announcement that it would use SIMPLE to open up its instant messaging system to other service providers came as a surprise to the IETF, which has seen little participation by AOL in the SIMPLE development process. Similarly, Microsoft plans to support SIMPLE in its MSN Messenger and Windows XP operating system, due out in September.

Taken together, the AOL and Microsoft announcements make it very difficult for an alternative protocol to emerge as the open standard for instant messaging.

"The AOL announcement, together with the inclusion in Windows XP, provides credibility and numbers," says Henning Schulzrinne, another SIMPLE author and an associate professor of computer science at Columbia University. "Practically speaking, SIMPLE becomes the de facto standard."

The market momentum for SIMPLE is driven by the view that instant messaging will not be an isolated application, where end users can see when others are online and initiate spontaneous text-based chats. Instead, SIMPLE advocates say presence and instant messaging will become part of a broader

See **SIMPLE**, page 61

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Metro vendors question Spanning Tree standard

BY TERRI GIMPELSON

A debate is brewing over whether a new standard will help boost the resiliency of Ethernet enough to enable metropolitan-area services to really take off.

While Ethernet-based metropolitan services have gained a following in pockets across the country, observers say the networks delivering these services need to be as reliable as circuit-switched SONET networks before large numbers of customers will move traffic to them.

The question is whether the recently ratified IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) is the answer to Ethernet's shortcomings. All parties seem to agree that RSTP offers a vast improvement on the 30 seconds it takes traditional Spanning Tree to help a failed Ethernet link recover. But they differ on the extent of that improvement — estimates run from 10 msec to a full second or more — and whether it's sufficient for guaranteeing service-level agreements (SLA).

The consensus seems to be that RSTP is one component of several needed to make Ethernet as resilient as SONET, which recovers from link outages in 50 msec or less, in the metropolitan area.

"[Recovery] times all depend on how one implements the standard," says Tony Jeffree, chairman of the 802.1 working group and editor of the 802.1w document. "If one combines the technology with other Ethernet technologies — specifically the Link Aggregation Protocol — it's possible for service providers to guarantee SLAs where they were not traditionally able to get [tens of milliseconds] resiliency and recovery time."

Some metropolitan Ethernet equipment vendors disagree with Jeffree's assertion that RSTP can provide recovery in tens of milliseconds.

David Yates, director of marketing for Atrica, says RSTP's recovery time is closer to 1 second, too slow for carrier-grade service levels.

"Rapid Spanning Tree results in faster recovery times, but it's still not in the submillisecond category, which doesn't allow it to carry certain types of traffic or guarantee SLAs," he says.

Even in the LAN, users are not seeing recovery time in 1 second, let alone milliseconds.

"Fast Spanning Tree helps some, but it's still not perfect for some hosts," says Phil Kwan, associate director of network infrastructure for Incyte Genomics. "I'm also still not seeing failover times of 1 second yet. We're lucky if we see 10 seconds from boot up to traffic transport."

Ashwin Moranganti, a product manager at metropolitan network equipment maker Appian Communications, says RSTP lacks the fault-management capabilities that service providers get with SONET and is not designed for ring topologies, which continue to be widely deployed in metro networks.

"[Rapid] Spanning Tree is not the right algorithm to show that the problems associated with Ethernet have been solved," Moranganti says. "The technology still isn't viable in a ring environment and often, especially in the metro, it's hard to deploy a mesh network."

That's why the IEEE is defining another standard for increasing the resiliency of Ethernet networks — 802.17 Resilient Packet Ring (RPR). Just as its name implies, RPR is designed for ring topologies carrying packets, but with the same resiliency attributes of a typical SONET ring.

Still, some Ethernet service providers say RSTP is a better bet than RPR.

"Unlike RPR, which has little consensus on anything yet — let alone something approaching a stable draft [standard] — RSTP is [complete]," says Jay Gill, director of IP service products at Telseon, a metropolitan-area service provider. "With RSTP solving one of the perceived problems of switched Ethernet mesh architectures, RPR seems to have a somewhat more dubious case for adding any value. For example, if you don't need ring topologies for restoration, then the concept of [RPR] is irrelevant."

Telseon plans to deploy RSTP throughout its network by year-end. Ethernet service provider Yipes Communications is also implementing RSTP.

Some analysts say it may be premature for Ethernet service providers to rely on RSTP for restoration of their networks. RSTP may be unable to scale along with the network, says Marian Stasney, an analyst with The Yankee Group.

"It's just not there yet," Stasney says. "It's just one piece of the tool kit."

Security is another issue in Ethernet virtual LAN services that RSTP cannot solve, says Tracey Vinik, technical director at market research firm RHK.

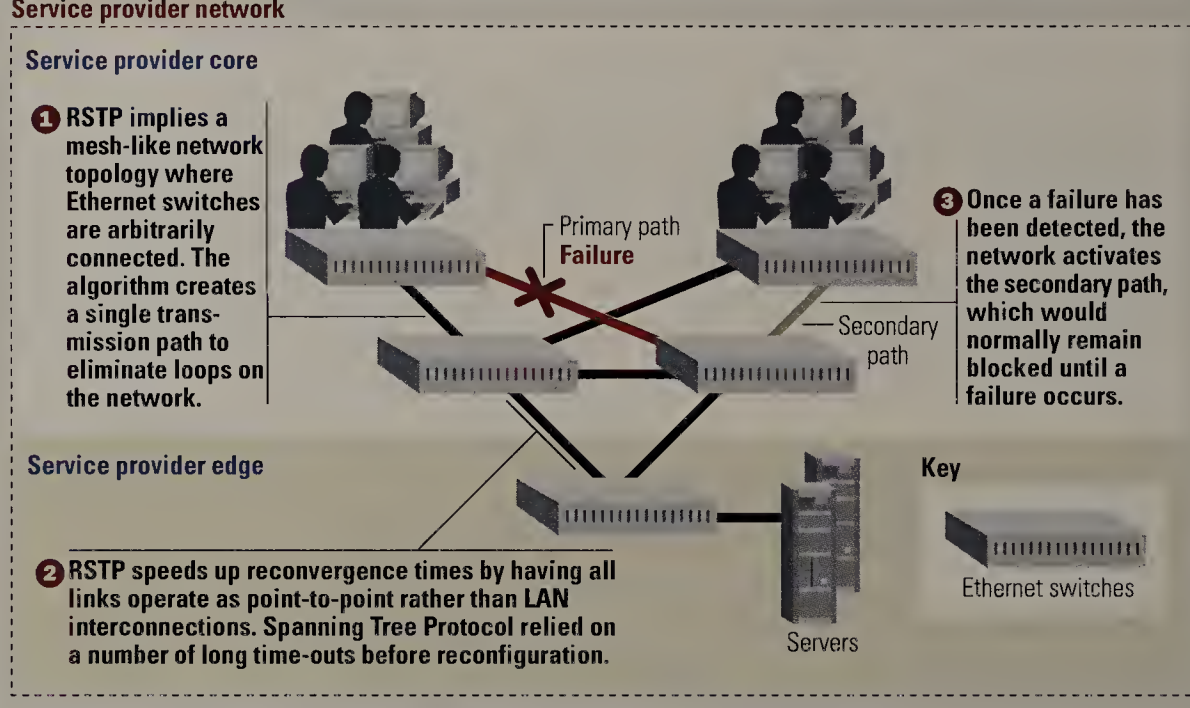
"If you cross service provider boundaries with [virtual] LANs, there's no guarantee that your VLAN ID hasn't already been assigned to some other VLAN," Vinik says. "[Rapid] Spanning Tree can support multiple VLANs, fast reroutes and prevent loops, but the biggest issue is security. Service providers have to be careful of how they implement these VLANs, especially across service provider boundaries."

Companies cannot be assured that just because their Ethernet service provider supports RSTP, traffic will be safe. They must consider the totality of the service provisioning environment before deciding whether to subscribe to Ethernet services.

"No one technology . . . is going to make Ethernet viable in the [metropolitan-area network]," Telseon's Gill says. "It's a collection of things that must come together for us to build the kind of network with rapid fail-over times like those of [SONET]. It's also going to take a good implementation of these standards and a smart network design. ◪

Faster reconvergence

Rapid Spanning Tree Protocol (RSTP) is a significant improvement on 30 second reconvergence of Spanning Tree Protocol, touting 10 msec reconvergence times in mesh Ethernet networks.



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"Never before have we had so little time in which to do so much."
—Franklin D. Roosevelt

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Entrust answers Microsoft users' security needs

BY ELLEN MESSMER

DALLAS — Entrust this week will ship upgraded digital certificate management software that aims to address network security concerns of Microsoft customers.

The software, Entrust 6.0, has been redesigned so the company's digital certificates can be used with Microsoft's Internet Explorer browser and Outlook e-mail without the need for an Entrust software plug-in to digitally sign and encrypt Web forms and messages.

However, for the Netscape browser, Lotus Notes and other client software, users still need the Entrust plug-in.

Entrust 6.0 also includes the Entrust Authority Security Manager 6.0, available as Windows NT or Unix server software, for issuing and revoking certificates, which bind a user's identity to a public-private key pair for signing, encrypting and authenticating documents electronically. It's possible now to store Entrust digital certificates in Microsoft Active Directory in addition to a standard Lightweight Directory Access Protocol-based repository.

Customers voiced their desire to have Entrust and Microsoft products work better together at a forum co-sponsored by the vendors last summer.

Entrust has exploited the CryptoAPIs in Windows 2000 to integrate its security offerings with Microsoft's products. Baltimore Technologies beat Entrust to the punch earlier this year by integrating its certificate authority product with Win 2000 and Active Directory.

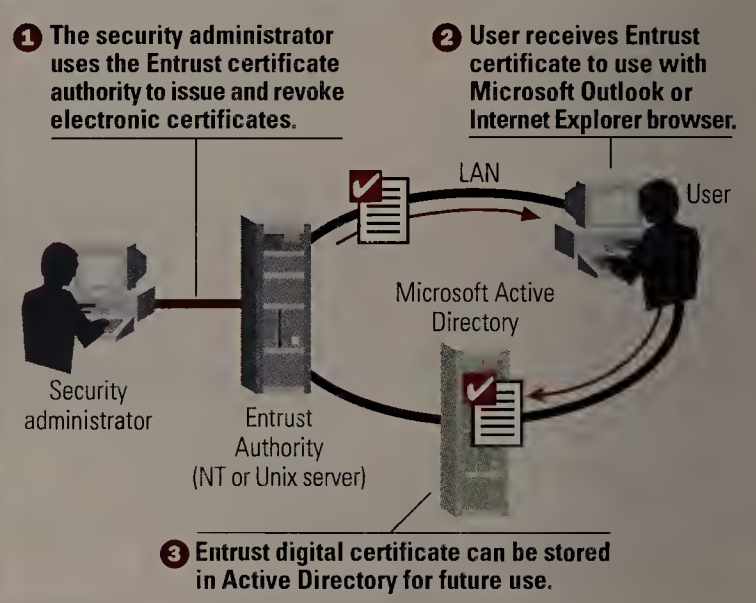
Entrust 6.0 includes new features that are not Microsoft-specific. The software now can work with products from Tumbleweed and Content Technologies that enable e-mail or documents encrypted with the user's Entrust certificates to be scanned for approval based on their content. Entrust 6.0 can also be used with Citrix servers, which support the use of thin clients.

Entrust Authority Security Manager 6.0 costs $25,000, and certificates for e-mail or Web authentication for 10,000 users start at $27 per user.

Entrust: www.entrust.com

Digital certificate compatibility

The Entrust 6.0 digital certificate system now works with Microsoft's Windows 2000 and Active Directory.



Wireless,
continued from page 1

international wireless standard, IEEE 802.11b, approved in 1999. LANs based on that standard have a maximum 11M bit/sec data rate in the crowded 2.4-GHz radio band.

The 802.11a standard was approved at the same time as 802.11b, but offers five times the speed and uses the nearly empty 5-GHz band in the U.S. and parts of the Pacific Rim. Because the different radios can't communicate with each other, no upgrade is possible, thus leaving users to replace one physical device with another. Chip makers were able to use existing 2.4-GHz technology for 11b chipsets, but had to work from scratch building 11a chipsets, which are just now starting to ship to LAN vendors.

Lower prices alone may not be enough to sell users on the faster equipment, however.

Sears, Roebuck and Co. plans to stick with slower speeds on its 802.11b-compatible in-store wireless networks, which are adequate for current data traffic, a spokeswoman for the company says. "The issue is more than just selecting an alternate standard [such as 802.11a]. Every device, about 30,000 total for Sears, would require a new radio, and there is no business or technical reason to do that."

Other wireless users will take a close look at the price/performance of 802.11a products for new deployments.

"If a 54M-bit/sec aecess point costs less than an 11M bit/sec or a 2M bit/sec, then we're going to purchase the 54," says Michael Finch, director of mobile solutions for FinTech Solutions, a Calgary, Alberta, systems integrator. But that decision will also hinge on having corresponding 54M bit/sec radios for the handheld clients, at an affordable price. "If the cost of the handhelds was at a premium, we'd probably stay with the 11M bit/sec because the incremental cost for dozens of handhelds would probably outweigh the lower cost of the access points."

FinTech's main wireless vendor is Symbol Technologies, which plans to bring out the faster 802.11a LANs early next year. Finch now expects only a small increase in price for those products compared with current 802.11b products.

Almost none of the 15 to 20 hardware vendors in the wireless LAN market have announced pricing plans, though recently several, such as Symbol and Intermec, have said there will be only a "small price premium" for 802.11a compared with current products. One of the few vendors to give specifics is Proxim, says Gemma Paulo, wireless analyst with Cahners In-Stat.

"Proxim's selling price for a eard will be about $195, and for an access point, about $695, which are lower than I expected," she says.

An abundance of features in the 802.11a chips means LAN manufacturers spend less on other components, which drives down the final price. So, too, will fierce competition.

About two dozen vendors are selling 802.11b products, and nearly all have said they'll offer the faster versions late this year and early next year. Farpoint's Mathias says the wireless LAN market was about $1 billion in 2001, most of that 802.11b sales, and is expected to at least double this year.

Offsetting the downward pressure on prices will be efforts by vendors to charge a premium for added features and enhancements, at least for access points. Vendors will offer more expensive rugged or fire-resistant metal housings, instead of plastic, for example, or a range of antenna options, sophisticated power management.

Yet so far, vendors are almost downplaying the significance of much faster wireless networks and much lower prices.

"[The 802.11b standard] will be around for a long time," says Christine Falsetti, a Cisco marketing executive. "We have to work a migration strategy with our customer base to see if 11a is right for them."

But what's not to like? You get cheaper than expected 802.11a wireless products, five times the bandwidth, and plenty of wireless VPNs and firewalls available for beefed-up security. Even the theoretically lower range of 5-GHz radios may not be as much of a problem as first thought. Atheros' Rich Redelfs says most wireless access points are within a 56- to 60-foot radius, which can easily be matched by 802.11a LANs.

"The last argument you can make about wireless LANs — lower performance than wired LANs — will go away," says Farpoint's Mathias. "You'll see very similar performance between 11a LANs and 100M bit/sec wired LANs." ◪

Getting more for less?

High-speed 802.11a wireless LANs could be a lot cheaper than anyone thought.

Price expectations for 802.11a (54M bit/sec) products — expected out by year-end — are dropping . . .

Previous estimates	
Interface cards:	$200 – 285
Access points:	$1,000 – 2,000
Current 802.11a estimates*	
Interface cards:	$150 – 200
Access points:	$700 – 1,400

*Based on analyst projections and vendor guidelines.

. . . making prices comparable to those of existing wireless LAN products.

	List price	Street price
Interface cards:		
3Com AirConnect	$200	$160
D-Link DWL-650	$130	$87 – 140
Access points:		
3Com AirConnect Wireless Access Point	$1,000	$790
Intel Pro/Wireless Access Point	n/a	$636 – 820

on TPC-C, TPC-W and TPC-H benchmark results. TPC-C: ...03/tpmC, availability date 12/7/00. Oracle: 230,533 tpmC, $47.90/tpmC, availability ...30/01. TPC-W: 10,000 ... count results. DB2: 7,554 W... ...ability date 10/31/01. Oracle: ... posted. TPC-H 100GB results, DB2: 2,733 QphH, $347/QphH, ...-W and TPC-H are trademarks of the Transaction Processing Performance Council (www.tpc.org). ...e-business logo and ... are registered trademarks of ... Torvalds. UNIX is a ...tered trademark of The Op... ...s, other countries, ... both. Other company, pro... ...s may be trademarks or service marks of others.

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IT'S A DIFFERENT KIND *OF* WORLD.
YOU NEED A DIFFERENT KIND *OF* SOFTWARE.

Media warnings help limit Code Red damage

BY ELLEN MESSMER

The worm called Code Red did not cause an Internet meltdown as some had predicted last week, but it certainly did cause the network world to sit up and take notice.

The extraordinary volume of press coverage about the dire warnings focused the attention of IT professionals and the general public to help slow the worm to a crawl. This computer worm was first noted as a danger July 20 as it attempted to shut down the whitehouse.gov Web site by launching a distributed denial-of-service attack at a fixed IP address from Web servers it had infected.

Code Red became dormant after the July 20 attack, but reawoke in Web servers where machine clocks are set to an incorrect date that corresponds to its two-week infection period. It spread by exploiting a buffer-overflow vulnerability in Microsoft Web servers.

The FBI's NIPC Director Ronald Dick issued a warning about Code Red early last week.

"The proliferation of the Code Red worm could degrade the functioning of the Internet," Ronald Dick, director of the FBI's National Infrastructure Protection Center (NIPC), warned early last week.

He was flanked by security experts from the SANS Institute, Internet Security Systems and CERT Coordination Center, as well as Microsoft Vice President Scott Culp.

However, according to two firms that measure the Internet's performance, Keynote and Matrix.net, there was no substantial slowdown after the worm reactivated Tuesday.

According to SANS Institute Director Alan Paller, it's only necessary for a distributed denial-of-service tool such as Code Red to infect a few hundred machines to carry an attack to bring down a particular Web site.

"We're still fighting a war here with this," Paller says, noting that last week systems administrators were applying the software patch to their Web servers at a slightly faster rate than servers were becoming infected. An estimated 300,000 Web servers were infected by week's end.

Many of the organizations that joined the NIPC to fight Code Red were also taking steps behind the scenes to get as much cooperation from ISPs to locate sources of Code Red-infected machines in order to get their owners to apply the Microsoft patch.

But only a few ISPs were heeding the call.

"UUNET has been doing a wonderful job," Paller says, "especially in comparison to many others." ◪

Auction,
Continued from page 1

The story is well-known: The demise of the dot-coms and growing vendor inventories due to a slumping economy have put a glut of equipment on the market, with much of it selling below list price.

Auction sites such as eBay, Yahoo and uBid all have pages devoted to networks and IT, which are always active with buyers and sellers. The power of online auctions has even been embraced by large IT vendors such as Microsoft, which is integrating eBay into its .Net initiative, and Sun, which has sold more than $10 million worth of equipment directly through online auctions.

As of last Wednesday, there were 4,027 network products up for auction on eBay, ranging from Marconi ATM routers to 3Com hubs and RJ-45 connector crimping tools. But Cisco is the dominant brand on eBay's "Networking and IT" pages, representing almost half the products being auctioned.

Among the hottest items are the Cisco 2500, 2600 and 3600 series routers. While a new 2500 can cost between $1,600 and $2,000, bids for these devices can hover between $200 and $600 depending on how many parties are interested.

"We save about 50% to 75% off of list price by buying products from eBay," says David Hicks, an advanced systems developer at the University of West Florida in Pensacola. "The equipment you get from eBay sometimes has some scratches, but it usually works just fine."

Hicks uses gear purchased from eBay to outfit the university's testing lab, where he and his staff can test applications and server cluster configurations. He recently bought two eight-port Dell Fibre Channel switches on eBay for $1,200 apiece, which would have cost $8,000 new.

When systems are ready to be moved from the lab to production, the university usually purchases new equipment for the project, he adds.

Others trust the equipment bought at auction for their production networks.

"This is live stuff in our network," Honeycomb's Anderson says of his eBay-purchased gear, mostly Cisco routers and switches. "We're not playing around with it."

Deals on servers are also available.

"I'd rather buy name-brand servers even if they're two or three generations old," Anderson says. "I'm not worried about buying used equipment because I know how to fix it if there are problems. Saving money is big for us."

Anderson has purchased most of the 90 or so Compaq ProLiant servers in his hosting firm second hand, either from online auctions or used-equipment distributors he finds on eBay. Many of the products he buys at auction are still under warrantee, which is also a boost. "I've had technicians from Compaq come out and fix some of the servers I've bought off of eBay," he adds.

Wayne LeFrancois, a systems technician for Global Pacific Wireless Internet, a wireless service provider in Orange, Calif., buys Cisco routers on eBay for personal reasons. He's building a home network lab in preparation for his Cisco Certified Internet Engineer test. LeFrancois has already purchased five Cisco 2500 series routers, each costing $300 to $600.

"There is no way I would be able to afford this equipment if I bought it from Cisco," he says.

Joe Devlin, chief software architect for Gensym, a Massachusetts software firm, has purchased close to 100 pieces of network equipment on eBay for his company's test lab. While he routinely finds older routers that are 80% to 90% lower than list price, he says there are pitfalls users should be watchful for when bargain hunting.

"There are a lot of mature [router] product lines out there such as Bay, Cisco and Nortel where they're at Version 12 or 14 of the router operating system," he says.

"You might be buying something where [the seller] claims to have no idea how old it is, but they're selling something that has a fantastically out-of-date operating system on it," he adds.

Bringing a support contract up to date on an old product to get a new operating system version could cost 10 times more than the product bought at auction, he adds.

Buying used routers can also cause password problems.

"Almost every piece of equipment you get will have some kind of password on it," Devlin says. Although he's received some factory surplus gear where the password was never set, "more likely it'll be off a dot-bomb and the password will be whatever that company's network manager had put on it."

While resetting the password can be done by connecting a PC to a router's serial port and using a terminal program to access the router's operating system, users can avoid extra work by asking the sellers if they have the documentation and passwords, Devlin adds.

For larger companies, buying on eBay may not be worth the strain on existing relationships with key vendors.

"We buy all of our stuff through Cisco," says Bill Homa, CIO of Hannaford Brothers, a supermarket management firm in Scarborough, Maine. "We have an excellent relationship with Cisco; there's no reason to upset the apple cart." ◪

EBay buying tips

While good auction deals exist for routers and other network equipment, auction newbies should follow a few tips from experienced eBay buyers:

1. Ask questions: Ask for pertinent information about a piece of equipment, such as its previous use or technical questions about the product specifications. If the seller doesn't know what you're talking about, that's a bad sign.

2. Get the documentation: Make sure the product documentation and passwords for accessing the device are available. Also ask the buyer if any warranty or support contacts are associated with the item.

3. Know what you're buying: Don't buy an expensive piece of equipment from eBay unless you're very familiar with the product and can troubleshoot or tweak any problems that may arise.

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IT'S A DIFFERENT KIND OF WORLD.
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IBM putting big bucks behind grid computing

Effort could speed delivery of massive computing technology.

BY DENI CONNOR

ARMONK, N.Y. — IBM last week said it is investing $4 billion in grid computing, a move that could help extend this technique for exploiting the power of thousands of distributed computers beyond its scientific and university roots and make it practical for all sorts of businesses.

The idea behind grid computing is to deliver computing and storage resources much like utility companies deliver power, eliminating or greatly reducing the need for customers to buy their own massive computing systems.

The technology — enabled by sophisticated clustering and supported over the Internet — is seen as being particularly useful for handling huge computer projects that organizations might only need to carry out once in a while. The technology is already used for a variety of applications, ranging from weather forecasting to aerospace design.

"The state of Mississippi bought a supercomputer for all the companies located there a few years ago," says Annie McFarland, a Clipper Group analyst.

"They did that because they knew the companies in the state couldn't afford to buy the kind of computers they needed to do oil and gas exploration and visualization. Sharing the computing cycles makes a lot of sense for the types of applications you have in pharmacology, energy and the automotive industry," she adds.

IBM's $4 billion will go toward building 50 data centers around the world, some of which will support the U.K. National Grid, a consortium of networked computers that involves eight universities and has a budget of $25 million.

IBM is one of just several big names in computing getting behind grid computing. Others include Sun, which last month announced it would donate its distributed computing Grid Engine software to the open source community.

Hewlett-Packard also says it will make available its Coolbase software, which lets users share a variety of computing devices over the Internet, to the open source community.

IBM is working with an open source consortium called Globus (www.globus.org) to define and identify security and access protocols, bandwidth and latency issues, and routing and switching technologies that separate environments within grids.

This work could help address some of the concerns companies are likely to have about grid computing.

"They fear losing control, of something going wrong and not knowing who is responsible," McFarland says.

"But one area where the Globus protocols are most effective is in policy management, quality of service and authentication," she says.

While grid computing technology someday might work its way into corporate networks, most companies that choose to take advantage of it will do so on an outsourced basis, observers say.

"Industrial projects so far at companies such as those at Glaxo Smith Kline or British Aerospace are not looking at implementing the software in house right now, although in a couple of years they will," says Tony Hey, architect for the U.K. National Grid.

"Now they are participating by giving manpower, cash, hardware or software licenses [to projects like ours]," he adds. ◪

Cisco box translates Web pages for PDAs

BY PHIL HOCHMUTH

SAN JOSE — Cisco last week jumped into the burgeoning wireless Web market with an appliance it says can translate Web data for 'Net-enabled cell phones and PDAs.

The Cisco CTE (Content Transformation Engine) 1400 could be used by a company to connect mobile users with corporate databases via wireless devices that have Internet access, such as handheld computers or mobile phones that use Wireless Application Protocol (WAP). The CTE could also save corporations the cost of duplicating Web content on multiple servers in order to make it available to wireless clients.

The CTE has been installed at Stanford University Law School for four months. The box translates Web resources such as faculty directories and other data for law school students, 60% of whom have Palm Pilots with Internet access, according to Mitch Davis, CIO for the law school.

"Rather than having to rebuild our Web pages again and again to serve each different kind of device students have," Davis says, the CTE can reformat the data for each device from one set of servers. He says the CTE is good at filtering images from Web pages for display on the small screens of PDAs and BlackBerry messaging devices.

Wireless infrastructure boom

The worldwide market for infrastructure products that support wireless Internet applications will jump from $217 million in 1999 to $5 billion in 2004.

SOURCE: IDC

The law school is also testing an IP phone system from Cisco. Down the line, Davis says, the CTE could push phone directory information and other XML-based messages to LCD displays on Cisco IP phones.

At Stanford, a script running on the law school's Web servers determines what type of Web browser is requesting content. Requests from PC Web browsers are accepted and wireless device browser queries are passed to the CTE. The CTE determines the device type, then pulls the requested data from the Web servers, reformats it and delivers it to the wireless device.

According to Cisco, other configurations could have the CTE sitting in front of a Web server farm to act as a filter between a wireless device and a back-end Web or database server. Using Layer 7 (or application layer) packet inspection, the CTE could identify what type of device was requesting data by reading the type of browser the client device was using (whether it was a PC using Internet Explorer or a cell phone with a WAP browser).

The CTE's software engines would retrieve the data from a server and modify it for the client, taking into account the device's screen size and memory.

Parts of the software in the CTE are developed through Cisco software partner WebUnwired.

In larger configurations, a load-balancing device could be used to off-load wireless Web traffic directly to the CTE for processing, thus freeing up the CTE and Web servers from packet inspection duties.

Another feature of the CTE is that it can support 10,000 unique users on a single appliance by storing Web cookies. Most wireless Web appliances do not support cookies. The device also supports 1,400 concurrent requests for data from client devices.

To control how content will look and what kinds of devices can access enterprise Web data, the CTE Design Studio tool is included with the box. For securing WAP phone and PDA sessions, the CTE 1400 includes Secure Sockets Layer sessions and can be integrated into a VPN, Cisco says.

Cisco's CTE 1400 is expected to be available later this month for $70,000.

Cisco: www.cisco.com

Correction

The story "CNT looks to link storage nets over IP" (July 23, page 12) should have stated that SANcastle's GFS-8 product is iSCSI- and Fibre Channel IP-ready, not iSCSI- and Fibre Channel over IP-compatible, as standardization of those technologies has not yet been achieved.

Infrastructure

TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage

Briefs

Palm has announced it will form a subsidiary to handle development and licensing of the company's **Palm OS**, which runs on hardware from Palm and others, such as Handspring and Sony. Palm says the group will be formed by year-end. The move should eliminate tension inherent in Palm selling operating system software that runs on its handheld devices and those of companies that compete with it in that market.

Palm: www.palm.com

Storage vendor **MTI Technology** last week launched a solid-state file caching appliance for enterprise Unix and Windows NT/2000 networks. The **V-Cache** sits between the Fibre Channel or SCSI-based storage arrays and the server, and caches frequently used files such as message queues or database redo logs so they can be delivered to users faster. Software on the device enables multiple servers to access data in cache simultaneously. Its solid state technology enables users to access files twice as fast as they can with traditional disk technology, MTI claims.

The V-Cache starts at $75,000.

MTI: www.mti.com

Net Optics announced last week a rack-mountable tap, a device the size of a small hub that lets IT professionals monitor unshielded twisted-pair networks from protocol analyzers designed originally for monitoring fiber networks.

The GigaBit TX to SX tap works in half- or full-duplex mode for up to 726 feet and includes two power supplies that share the load and provide failover capability. The new tap costs $6,000.

Net Optics: www.netoptics.com

The PC at 20: Remember your first?

Network World *readers recall their very first desktop computers.*

BY APRIL JACOBS

Next week marks the 20th anniversary of IBM introducing its first PC, the 5150, the device that really ushered in the use of desktop machines in the corporate world. To recognize the occasion, we surveyed readers to learn about their earliest PC memories, many of which actually predated the first IBM PCs. What follows are excerpts from their tales:

"I opened up my first computer — an Apple II — on the day I got it to see how it worked. Computers weren't as complicated then; they were easier to figure out."

Michael Dell, CEO, Dell

The first thing he did was take it apart

His first PC was a far cry from what he uses in the office today. His current desktop is a Dell OptiPlex GX150 small form factor PC. It features a 933-MHz Pentium III processor, 512M bytes of memory, external speakers with a subwoofer (lots of sound on this baby), Windows 2000 and Office 2000. Who is he? He's Dell CEO Michael Dell.

"I opened up my first computer — an Apple II — on the day I got it to see how it worked," Dell says. "Computers weren't as complicated then; they were easier to figure out. After my Apple, I moved on to IBM PCs and started enhancing them myself. And then I started selling them."

The time before floppy disks

"Seems that my first PC was a silver/gray Tandy TRS-80 Model 1," says John Dunkle, president of Workgroup Strategic Services. "It was the latest and greatest, with the best part being that it came assembled, unlike the Heathkit personal computers. I remember tearing open the carton and firing it up for the first time — with [Power On Self Test] telling me I had a whopping 4K of memory installed. What could I ever use so much memory for? Perhaps, for all those lines of BASIC. I also tried my hand at machine language — you know, 0s and 1s in base 2. After about three months, memory prices started to fall drastically, so I decided that I'd just have to upgrade to a more robust system.

See **PC**, page 18

Two decades of the PC

A showcase of the personal computer during the past 20 years:

1981
IBM announces the IBM 5150 personal computer in New York.

Novell Data Systems ships the Novell Data Management Computer, with the ability to share its hard drive space with other computers.

1982
Microsoft signs agreement to develop applications for the Macintosh.

Mouse Systems introduces the first commercial mouse for the IBM PC.

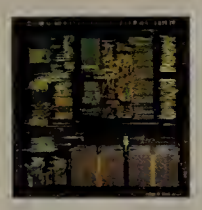
1983
Lotus 1-2-3 ships.

Apple introduces "Lisa" computer for $10,000.

Novell introduces NetWare network operating system for the IBM PC.

1984
Apple introduces the Macintosh computer.

Philips announces CD-ROM players for PCs.



1985
Intel introduces the 16-MHz Intel 80386 DX microprocessor.

IBM introduces its Token Ring network.

1986
IBM boosts the speed of the IBM PC AT by replacing the CPU with an 8-MHz Intel 80286.

1987
Apple makes its one millionth Macintosh.

IBM and Microsoft announce Operating System/2 (OS/2).

1989
Intel announces the 25-MHz 486 microprocessor.

1990
Microsoft ships Windows 3.0.

1992
IBM and Microsoft sign a "divorce" document.

1993
Apple ships the 10 millionth Macintosh.

Digital Equipment announces the 200-MHz Alpha 21064 processor.

Intel introduces the Pentium processor.

1994
Apple, Motorola and IBM announce they will create a computer platform to run all major operating systems, except Windows.

1995
Microsoft releases Windows 95.

1997
Steve Jobs announces investment of $150 million from Microsoft.

1998
Compaq buys Digital Equipment for $9.6 billion.

Microsoft ships Windows 98.

1999
Pentium III processor announced.

2001
Intel introduces Pentium 4 processors with speeds up to 1.7GHz.

Tolly on Technology . Kevin Tolly

When usage matters: Broadwing's Gigabit in the MAN

With the likes of Yipes Communications and Cogent Communications already deploying high-speed Ethernet metropolitan-area networks, Broadwing Communications' May announcement that it will deliver Gigabit Ethernet interfaces to the customer premises did not come as a shock. What did take me aback was the statement by a Broadwing vice president that customers would pay only for what they use. To me, usage-based pricing and LANs are a deadly combination.

Let me begin at the end. Since the inception of LANs at the barely-a-megabit level, LAN designers have, essentially, ignored traffic. Given the relatively quick ramp up over the years from low-speed shared to high-speed switched LANs, it has rarely been worthwhile to spend the time to figure out what traffic was using up bandwidth that would otherwise be unused. The cost of that Fast Ethernet or Gigabit uplink was fixed, regardless of the usage. So long as no bottlenecks existed, no attention was needed.

That, of course, would all change were a customer to move into Broadwing's MAN. While specifics of pricing were not disclosed, the bottom line is the same — you'll pay "by the pound" for whatever crosses your link — whether you've asked for those bytes or not.

Imagine the accounting nightmare. A full-duplex, Gigabit Ethernet link running at full load, day and night, could push through (according to my back-of-the-napkin math) some 650 MILLION gigabytes (not bits) of traffic over the course of the month. What would your bill look like? Where would the breakpoints be?

More importantly, how would this change the customer's behavior?

Today, network managers are content to filter out spam and unwanted attachments at the edge of the network. With the usage-based model, the damage would have been done — economically speaking — before the e-mail arrived at the filtering point.

One can imagine new kinds of hacker attacks where these hackers keep a steady "drip, drip, drip" of, say, large "ping" frames going across the link but staying "under the radar" of the firewalls.

The enterprise-caching business promoted "saving bandwidth" by serving content locally. Overall, companies have greeted this technology with a yawn. With edge traffic shapers hooked up to links that are not usage sensitive, network managers don't seem really to care if the same 80M byte service pack gets downloaded by different (or the same) people time and again across the Internet.

I have to wonder whether Broadwing has thought this through. The approach that it is taking is fraught with problems.

Not only does Broadwing have to make sure that the usage tracking system is accurate — and can deal with these kind of large numbers — it has to make sure the accounting mechanism doesn't negatively affect system performance. Historically, "intensive" monitoring has exacted a toll in performance.

Furthermore, the company is going to have major headaches with resetting the counters at the end of an accounting period. And what happens if a system failure in a switch wipes out the utilization information just before the end of the period?

And, unlike water, gas or electric meters, the customer can measure his utilization on his own. I can almost guarantee that multi-Gigabyte "irregularities" will surface when customers compare the usage they've monitored with what Broadwing supplies.

And, assuming the myriad technical hurdles can be overcome, how on Earth is Broadwing going to change the way customers design their networks? This is just not going to happen.

Unless Broadwing wants to move deeply into the services space and provision e-mail servers and traffic shapers on their side of the network, pay-as-you-go might be something it wants to reconsider.

Tolly is chairman and CEO of Tolly Research. Tolly is also founder, president and CEO of The Tolly Group. He can be reached at ktolly@tolly.com.

PC,
continued from page 17

So, $200 or so later, I upgraded with a second 4K memory module. Unfortunately, I found that all that extra memory did little to improve loading time of the saved programs from the cassette recorder. Yes, this was before the revolutionary 5.25-inch floppy drives came along."

The printer was a Diablo daisy wheel . . .

"My first PC was a Xerox 820 with 64K, yes K, of RAM and two 512K, yes K, 8-inch Double Density floppy drives, and a 300 baud modem," says Mark Chagaris, president of Sphinx Consulting. "All of this hardware power was leashed together by the CPM operating system. Believe it or not, the system was reliable and ran WordStar and SuperCalc effortlessly, and although printing to the Diablo daisy wheel printer was slow, the quality of text was as good as an IBM Selectric typewriter. It would be a few years before the Sideways program was introduced and provided the capability to print in landscape and compress the text. I'd still be using it if Bill Gates had not taken that trip to Pacific Grove."

A TI-99/4A for $100, what a deal!

"My first PC was the TI-99/4A. I got it at K-Mart for $100 when the bottom fell out of the market. It was basically a game machine with some programming capabilities," says David Green, a product line engineer for an international communications manufacturing and services company.

"I remember writing a basic script to play a musical scale and thinking I was hot stuff! Of course, I didn't have a cassette tape drive to save off the program, but who cared. I had to resolder the game controller plug wires twice to keep it working. Then I really moved up. I bypassed the Eagle and Kaypro and Compaq luggables to get an Apple IIc, along with a big old daisy wheel printer. I remember using WordJuggler to write out my 50-page Master's thesis — it took forever to print on the daisy wheel printer."

First love . . .

"When I was 17 years old, I mowed at least 5,000 lawns to buy my first PC, an Altair by MITS," says Larry Genovesi, CTO of Network Engines.

"The Altair came as a kit and I put it together and it ran a pirated copy of the BASIC interpreter, had 16K of memory and a paper tape reader. Originally, the only way to program it was by using the front panel switches, and I used to play a game called 'kill the lit bit' that you could play by toggling the front panel switches. When I wasn't working on the Altair, I mowed more lawns to earn the money to buy a used teletype so I could program it more easily. It was my first love." ◪

VPN vendor RedCreek gets firewall friendly

BY TIM GREENE

NEWARK, CALIF. — RedCreek last week announced its VPN Expansion System, a combination of equipment and consulting that lets users integrate RedCreek gear with other vendors' firewalls.

The hardware and services package is intended for users who want to connect sites to a corporate VPN using broadband access via DSL, cable modem or wireless access networks.

RedCreek will initially offer the VPN Expansion System (VPN/ES) to integrate with Check Point Software's Firewall-1, so customers with a Check Point firewall will be able to add a RedCreek VPN and get advice on how to make the equipment work together.

RedCreek says it will add support for other firewall vendors later this year.

RedCreek is one of a minority of VPN vendors that does not offer a highly secure firewall that keeps track of active TCP sessions with its VPN appliances, so users have to integrate the equipment with other vendors' firewalls as well as other vendors' routers. VPN/ES is meant to simplify the process.

RedCreek hired an independent network testing and consulting firm, Opus One, to standardize integration of RedCreek gear with Check Point firewalls. Customers can access testing documentation at the RedCreek Web site (www.redcreek.com).

VPN/ES consists of RedCreek's top-of-the-line central-site VPN gateway, 100 RedCreek Ravlin VPN appliances for remote sites, management software, three days of consulting for design and setting up the first five sites, and a year of technical support.

VPN/ES costs $75,000 per 100 sites. ◪

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Unix vendors go on offensive

BY DENI CONNOR

OPERATING SYSTEMS

Vendors are improving Unix features to take on more complicated applications and server duties.

Unix vendors, faced with the growing threat of Linux and open systems hardware, have introduced more powerful versions of the operating system, and promise even better support for data center-critical business operations.

The latest Unix variations from IBM, Compaq, Caldera, Hewlett-Packard and Sun are more scalable, secure and manageable than their predecessors — and they can run Linux and Web-based applications on 32-bit multiprocessor systems. Soon most will operate on upcoming 64-bit Intel processors and be used to run applications formerly requiring mainframes or supercomputers.

"Unix systems are starting to crowd the edge of what used to be done with a mainframe. The No. 1 use of Unix is to support databases and distributed applications," says IDC analyst Dan Kuznetsky. "Unix is still at the core of many companies' networks, although it has lost ground on the low-end to Windows and Linux."

While the front end of many networks use Windows or Linux, Kuznetsky says back-end systems are typically Unix. He says Unix grew from 54% to a 57% share of overall operating system revenue in 2000.

Unix vendors aren't sitting still. Most are improving Unix features to handle more complicated applications and server duties. For example, vendors are expanding the clustering and multiprocessing capabilities of the operating system and adding features that make Unix more competitive with operating systems such as Windows 2000 and Linux.

Sun, the Unix market share leader, is expected to beta test its next version of Solaris this fall. Dubbed Helix, Solaris 9 will include support for Jini, a Java-based technology for tying net applications together and delivering network services, Sun sources say. Users familiar with Sun's plans say the next version of the popular operating system will also include Itanium support. Sun 8 currently includes the ability to run any recompiled Linux application on Solaris and to use the Gnome desktop interface. Sun would not comment on other future directions.

Meanwhile, IBM is moving full steam ahead with its AIX 5L Unix package. AIX 5L was developed as part of Project Monterey, a collaborative project between IBM and The Santa Cruz Operation (SCO) to create an operating system that combines Linux and Unix and will run on industry-standard Itanium servers.

IBM shipped AIX 5L, an operating system designed for transaction-intensive database environments and high-speed processing on Power-based RS/6000s and Itanium servers this year. AIX 5L includes system and debug tools and the ability to work in mixed Unix environments. AIX 5L supports features such as multipath I/O and symmetrical multiprocessing. AIX 5L also adds a Workload Manager that lets IT professionals define how applications will be handled and allocate processor cycles, real memory and disk I/O to them so they will perform optimally.

But most important is IBM's adoption of Linux. AIX 5L has "Linux affinity" — the ability to run recompiled Linux programs on Power-based servers, as well as future 64-bit Intel Itanium PCs and servers.

"Before Linux affinity, porting applications using C was simple because C was ANSI-standardized. However, porting C++ applications was a nightmare because of incompatibilities with AIX xlC libraries," says Roman Kanala, a consultant who writes Linux applications in Geneva. "Now that Linux libraries are present in AIX, every programmer can develop applications that run on IBM's machines. The cost of becoming a programmer is now much lower, and IBM will benefit from the fresh blood circulating in the Linux community."

IBM says it will introduce additional scalability and management capabilities for AIX in the next year, although executives wouldn't provide specifics. The company will allow increased tuning, management and dynamic allocation of processors and capacity in pSeries (formerly RS/6000) servers. And IBM will also enhance the operating system's ability to manage multiple distributed systems, clusters of servers or a multiple partitions within a single system.

IBM isn't alone in boosting its Unix package. Compaq has also reinforced its version of Unix — Tru64 Unix Version 5.1 — which adds the ability to better manage systems, reallocate resources and support up to 32 processors.

The company has added ARMTech software from Aurema that allows system resource allocation. Version 5.1 also includes enhanced workload tools and the ability to add and remove processors without taking down the system. Version 5.1 includes iPlanet Server, iPlanet Enterprise Server and a secure version of the Apache Web server. With 5.1, Compaq has also added a less-expensive local clustering technology that uses Ethernet as the system interconnect.

Tru64 Unix also includes the company's Linux and Tru64 Unix Affinity Program, the ability to run Linux applications such as Linux Gnome and KDE desktop environments on Tru64 Unix machines or to run Tru64 Unix on Linux machines. With Tru64 Unix, network developers can save time because they can develop applications for a single platform and port them to other Unix environments instead of writing separate code for multiple Unix platforms.

The company recently said it will port its Tru64 Unix code to the Itanium platform by 2004. Development of RISC-based Alpha processor servers will continue through 2008. By 2003, Compaq will be able to make Unix systems more fault-tolerant by hot-swapping all Unix system components, including memory and I/O capability. Compaq will also expand its systems up to 128 processors by 2003.

Caldera, which acquired OpenServer and UnixWare from SCO last year, has added capabilities from these operating systems into its Linux products. A company spokesman indicates that the company doesn't plan any further development of SCO OpenServer other than to fix critical bugs. Instead, Caldera will maintain and support OpenServer customers while migrating them to Open Unix Release 8.0, the new name for UnixWare.

Open Unix 8 has a Linux Kernel Personality Kit that lets it run recompiled Linux applications and also makes it compliant with the recently released Linux Standards Base, a specification that lets any Linux application run on any company's distribution of Linux.

It also supports files of 1 terabyte and up to 32-processor servers. Caldera's products work on Intel and AMD-based servers and PCs. Open Unix 8 shipped in June.

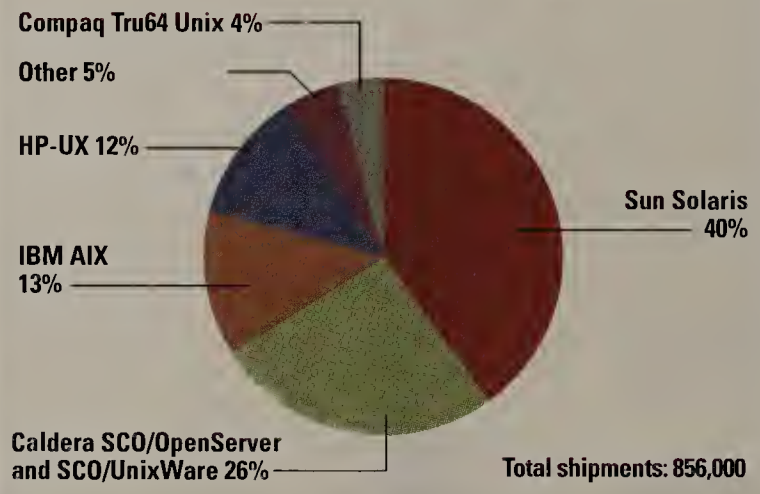
HP-UX 11i, introduced last summer, supports Linux and simplifies the transition of Linux applications to HP-UX. HP offers the Linux Compatibility Solutions on HP-UX for the Itanium Processor Family and two other tool kits for porting Linux applications. HP-UX runs on PA-RISC and Itanium processors.

Companies can run native Linux applications on 64-bit Itanium servers when they become available without recompiling. HP indicated that it would also add Mobile IPv6 support for wireless devices and introduce 32-way clustering next year. ◪

Unix update

Sun continues to rule the market for Unix, which has become popular for a variety of applications.

Worldwide Unix server software shipments for 2000:



Total shipments: 856,000

Most popular Unix applications in 2000:

1. Databases and distributed computing
2. Messaging
3. File and print services
4. Custom commercial applications
5. Packaged commercial applications
6. Custom technical applications

SOURCE: IDC

Carriers & ISPs

The Internet, Extranets, Interexchange and Local Carriers, Wireless, Regulatory Affairs

Briefs

Everest Broadband Networks, a provider of Ethernet services to multitenant buildings, and metropolitan Ethernet provider Telseon inked a deal last week that will give Everest customers in four markets access to network services from Telseon's service provider partners. Everest clients in 38 locations, including New York, Los Angeles and Dallas, can order services such as IP videoconferencing, storage and voice over IP from Telseon partners through the arrangement.

Everest: www.everestbroadband.com; Telseon: www.telseon.com

Telesat Canada next year will launch its next-generation Anik satellite into orbit above North America and expects shortly afterward to offer the continent's first Ka-band commercial Internet service, bringing a new alternative for two-way, high-speed wireless 'Net access. As with its predecessor, this satellite will transmit messages on the C and Ku bands. But this new Anik, dubbed F2, will also be able to utilize half the 1 GHz of raw spectrum available on the Ka transmission band. Experts say having access to the Ka band will become increasingly important as more companies look for ubiquitous U.S. or North American network coverage.

ISP Cais Internet has changed its name to Ardent Communications. Shareholders approved the name change at the ISP's annual meeting last week. The company changed its name because it is transitioning from a service provider to the hospitality industry to one that offers IP services to business users around the country. Cais was primarily known as an ISP for hotels and resorts.

Ardent: www.ardentcomm.com

Digex boss discusses WorldCom influence

NetworkWorld Q&A

As the Web hosting market slowly shifts into managed hosting, Digex need not move at all, as managed services have been its foundation from the beginning. WorldCom now owns a 55% majority stake in the company, thanks to its recent merger with Digex parent Intermedia Communications. Network World *Senior Writer Jennifer Mears recently sat down with Digex CEO Mark Shull to talk about the company's plans.*

"There are a lot more things that we can do now that we have the financial support, the business support, the network and infrastructure that WorldCom and its salesforce brings."

Mark Shull, CEO, Digex

How has it been working with WorldCom?

The merger, or really the acquisition of Intermedia . . . was a really long process. During the interim, we were able to work very closely with WorldCom, roll out products that WorldCom would sell. They discontinued selling their managed hosting products and began selling ours. However, because the acquisition was not complete, we did not do as many things as we wished. With the acquisition completed on July 1, we're really in a much better position to work more aggressively . . . on a much more strategic level.

When you say a more strategic level, what kinds of things are you envisioning?

The way we look at the market is that we want to stay focused on what we do best, which is managing the applications, managing the computing for customers on an outsourced basis. The customers buying today are not dot-coms, they are enterprises, and so you need to have alliances and such with a lot of these other large players. But I think strategically there are a lot more things that we can do now that we have the financial support, the business support, the network and infrastructure that a WorldCom and its salesforce brings. It's not simply what we're doing together, that they're selling our products, per se, but rather an ability to go out and capitalize on this massive growth in enterprise computing out there and do that with the other leading players.

Do WorldCom and Digex approach customers separately?

It's kind of jointly and separately. We have developed a model after a little bit of trial and error, a teaming model. When there is an opportunity, WorldCom has 7,000 or so salespeople who have a much better chance of uncovering a lead than the less than 100 or so Digex salespeople. However, what we have done then is make sure that once there is that lead that we put the best resources possible on closing it, which includes the Digex sales folks.

As far as the data centers go, are Digex engineers really in charge?

Yes. We manage and are responsible for the design of the data centers, the operations of the computers, the applications, the networks. WorldCom is running the wide-area network.

Once we design and build out a data center, install our administration systems,

See **Digex**, page 22

AT&T, Verizon Wireless probe compromises of customer data

Providers say customers' personal information posted in chat rooms.

BY ASHLEE VANCE

SAN FRANCISCO — Verizon Wireless and AT&T Wireless Group have started investigations into a security breach that may have let outsiders see confidential information of at least hundreds of customers.

Officials from Verizon and AT&T confirmed that they are looking into an apparent security breach that permitted information of a number of users to be circulated publicly in Internet chat rooms.

Investigators in Kiowa County, Okla., are checking into complaints from customers who discovered that their private information had been posted publicly in a chat room and who noticed strange charges on their credit cards, according to Deputy Terry Tyler at the Kiowa County Sheriff's Department. A similar investigation is under way in Rancho Cucamonga, Calif.

Chat room log files and online interviews with the victims indicate that many of the victims signed up for wireless service from Verizon or AT&T between December and April this year, with most of the users living in Indiana and Illinois, according to news reports. Victims said they had ordered wireless services over the Internet from Verizon and AT&T. During the ordering process, victims were asked to provide credit card information. The security breach therefore may have occurred between transmissions among the wireless service providers and credit card service providers, security experts say.

Finding the weakest link

The information being distributed likely includes credit card numbers, Social Security numbers and driver's license numbers, along with other personal data typically used in online applications for a

See **Security**, page 22

Eye on the carriers . Lisa Pierce

TIPS FOR GETTING THE MOST OUT OF YOUR WAN

Companies frequently ask what they can do to get the best bang for the WAN buck. Here are a few recommendations:

Centralize wireline and wireless telecommunications planning and management functions. Costs can only be controlled when people are assigned the responsibility.

Some companies consider the WAN to be such a small item that it is no one's job, or it is one of many tasks assigned to an overworked data technician or network administrator. These companies are in for an unpleasant surprise.

Establish application development design guidelines to factor in network utilization. Unfortunately, developers often assume bandwidth is plentiful and cheap. They haven't paid the bill.

Review current network architectures to ensure efficient site-to-site connectivity.

Often, companies add network resources in an ad hoc fashion. Periodically, it makes sense to step back and assess how the entire infrastructure operates.

Is it really necessary for certain applications or departments to have their own access and WAN infrastructure apart from the larger organization? Sometimes, yes, but more often it's a relic of past political skirmishes. To these organizations I have a simple piece of advice: get over it.

Look at traffic patterns. From a network perspective, is it always most cost-effective to run all WAN traffic through a hub-and-spoke arrangement?

Consider switching out WAN services: When price/performance meets your requirements, move from private line or frame relay to ATM or IP VPNs. If your organization has two or more sites in a single large metropolitan area, consider metropolitan-area Ethernet networks.

Bandwidth need not always be added to support new applications that make extensive use of the WAN. Consider employing local enterprise caching capabilities, load balancing and bandwidth managers/-traffic shapers.

Reduce use of or eliminate applications that have marginal value to the business, and establish and enforce corporate policies on the personal use of company calling cards, cellular phones and corporate Internet accounts. Some studies estimate that personal use of the Internet at work may account for as much as 30% of traffic.

Create requests for proposals and entertain multiple bidders when approaching the expiration point on existing WAN contracts. Renegotiate prices, terms and conditions on existing contracts annually.

Consider leasing, not purchasing, expensive network equipment, gear that requires frequent upgrades, or equipment that employs proprietary vendor capabilities — for example, most cable and DSL modems.

Upgrade antiquated communications hardware and software — underpowered communications boards and inefficient router code can gobble up bandwidth.

Many customers are surprised to find such equipment still operates in their networks.

Examine the value of outsourcing particular WAN functions, typically those that have not been well serviced in-house. For instance, it often makes sense to outsource global remote access requirements. But since it is not a panacea, outsource on a selective basis.

Finally, get some perspective and look at the needs of the entire organization. Sometimes network costs have to increase for the costs of IT, sales or customer service to drop.

Pierce is a research fellow at Giga Information Group. She can be reached at lpierce@gigaweb.com.

Digex,
continued from page 21

which are quite sophisticated and quite large, we can run them lights-out.

The way it works then is when a customer places an order, we build that system at a separate build facility — we have one in the U.S. and one in Europe — and then it is shipped to the data center already tested.

We believe that's the right model, not only because it scales very well in our data center environment, but as we go forward the next generation of computing in the network really is servers anywhere.

So you'll be able to do that at a customer's site, in a [point of presence] — anywhere you need to deploy computing infrastructure. Then we manage it all.

So you'll manage servers in an enterprise data center?

Right now we have a project that is out of the labs and now into engineering and we'll be rolling it out later in the year. The whole design of that is to take everything we've learned about managing systems remotely in lights-out data centers and take it to the next level where we don't care where it needs to be deployed as long as it can be connected securely to a network. And that does, yes, include ultimately being able to deploy these things at customer sites if necessary.

Why should a company look to Digex rather than an Exodus or an IBM?

Exodus is primarily a collocation company. Fundamentally there is no defined managed platform or solutions really to build on.

You buy it piecemeal and you have to buy professional services, which are quite costly. IBM has a very sophisticated offer. But with IBM you're also having to accept the fact that you're going to be tied to IBM WebSphere, which is a fine application server.

The problem with it is it works overwhelmingly better with DB2 with IBM RS/600. It begins to tie you into proprietary IBM architecture, and you're pretty much tied into IBM Global Services.

With Digex we have a best-of-breed model, in terms of the platform, that could be a BEA application server, Sun or Microsoft platform, Oracle database. And we have teaming relationships with the large numbers of specialized systems integrators like Accenture.

Are there any kinds of new managed services users should expect from Digex?

What you'll see us doing is rolling out more application-level offers. You'll see us being more global with the addition of the WorldCom network.

We currently offer services out of D.C., San Jose and London. We're now adding New York, Paris, Frankfurt and Tokyo. Applications are probably most important. Because we now have access to the WorldCom network, we'll be able to offer much more dynamic kinds of replication and failover between data centers. With respect to caching, we will continue to work with Akamai, we have a very tight relationship with them. However, we'll use caching as a technology going forward to scale out Web servers in an economic way. ◪

Security,
continued from page 21

variety of services, according to Jim Magdych, security research manager for PGP Security, a division of Network Associates.

"It looks like some information may have been taken possibly from these wireless providers and also possibly from a third party that might be doing credit checks for the wireless providers," Magdych said.

The personal data was likely leaked as a result of unencrypted files used by the wireless providers, by third parties they work with, or by a malicious worker inside one of the wireless or third-party companies, Magdych said. In any case, private information was posted in an Internet Relay Chat room.

"We take the security of our customers very seriously and are investigating the situation," said a Verizon spokeswoman. Another Verizon Wireless spokesman went on to say that the company is "confident that our online store is absolutely secure."

AT&T Wireless says its Web site was not hacked and that the information was distributed by an unidentified third-party vendor.

"We are completely committed to protecting the personal and financial information of our customers," says a spokeswoman for AT&T Wireless. "We have our security folks investigating this right now."

But even if both service providers' Web sites are secure, perhaps extra measures need to be taken when dealing with third-party vendors that verify or process credit card information.

Vance is a correspondent with IDG News Services' San Francisco bureau.

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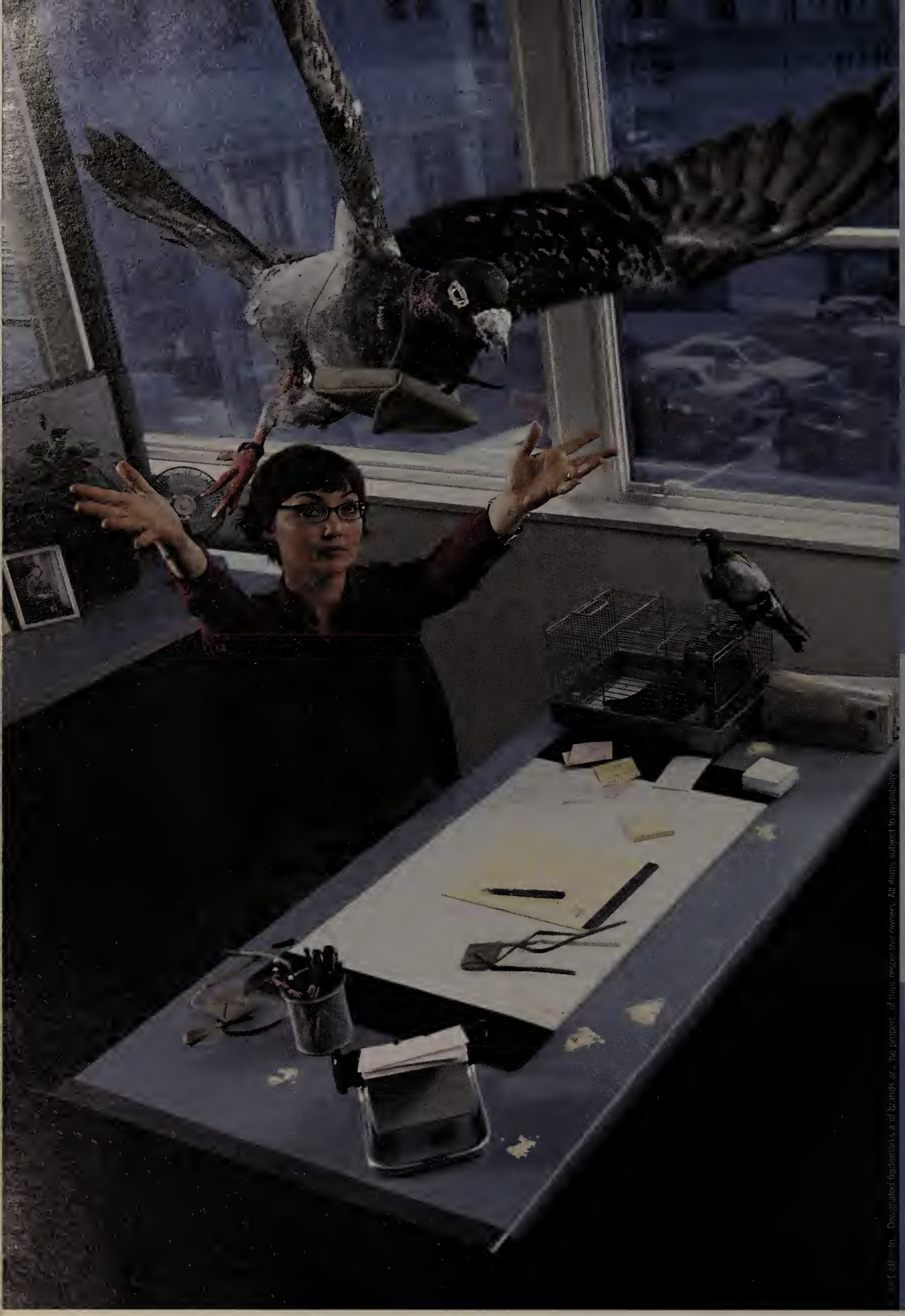

Telephone systems

Portable PCs

Servers

Networking gear

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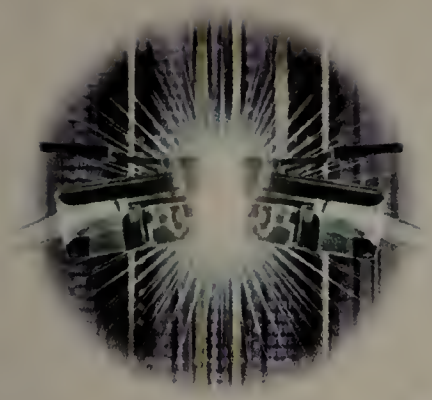

The Edge

Service provider developments at the juncture between the enterprise and the new public network

Briefs

Lucent announced the availability of Release 3.1 of its **ClientCare Call Center Deluxe Edition** software.

The product lets a service provider transform telephone systems at small and midsize business customers into contact management centers.

ClientCare Call Center Deluxe Edition performs inbound call handling and routing. It also supports simultaneous voice, e-mail, fax, chat, callback, call-through handling and Web-based queries.

Lucent: www.lucent.com

TranSwitch, a developer of large-scale integration logic for communications applications, announced an investment and OEM agreement with **TeraOp**, a privately held developer of optical switching and routing products.

TeraOp's switching and routing subsystems are based on Micro-Electro-Mechanical Systems technology. TranSwitch will use this technology to build systems for its customers that address applications in the access, metropolitan edge and core of the optical network.

TranSwitch: www.transwitch.com; TeraOp: www.teraop.com

Petabit routing company **Hyperchip** has opened an office in Dulles, Va., the Canadian company's first operations in the U.S.

The office opening follows the closure of IPOptical, a Hyperchip competitor that ceased operations two weeks ago. Hyperchip snapped up about 26 IPOptical engineers.

The Dulles office, which will house sales, marketing and customer support operations, will let Hyperchip be closer to service provider customers in the Washington, D.C., area, the company says.

Hyperchip: www.hyperchip.com

Equipment sales will slow into 2002

BY JIM DUFFY

Sales of core and edge switching and routing equipment will slow significantly in North America this year and next due to declining growth in Internet traffic and excess inventories, analysts say.

Because of sharply decreased spending by service providers, the implosion of the competitive local exchange carriers, and carriers' desire to extend the life of existing systems, switching and routing procurements will tail off, according to research firm RHK.

"There will be flatness this year and next while capacity issues get worked through," says RHK analyst Roz Roseboro. "There's definitely more capacity than traffic warrants at the moment."

She declined to provide more detailed data, citing the propriety of RHK's study to its client base.

Roseboro's point about extending the life of existing systems is evident in recent data from Vertical Systems Group, which shows "legacy" ATM services growing 45% from last year, from $1.1 billion in 2000 to $1.6 billion in 2001. Increasing demand for higher-speed access ports for broadband Internet connectivity, multimedia applications and the aggregation of lower-speed frame relay traffic is spurring revenue growth, the research firm says.

This does not bode well for companies making equipment that lets service providers turn up "next-generation" data services, such as IP and Gigabit Ethernet VPNs.

ATM still going, growing strong

Despite the advent of data-oriented technologies, users are still sticking with older services.

U.S. ATM service market (in billions)

SOURCE: VERTICAL SYSTEMS GROUP

"ATM customers are looking for reliable service levels with leased lines," says Rosemary Cochran, co-founder and principal of Vertical Systems Group. "There's not a lot of impetus to switch. We see little movement from existing customers to a metro VPN-type service."

ATM service revenue will grow steadily year-over-year through 2004, although not at the rate seen this year, due to market saturation, Cochran says. Revenue is expected to grow 44% next year over this year, 30% between 2002 and 2003, and 26% between 2003 and 2004 (see graphic).

Still, that's a compound annual growth rate of 36%, a robust number considering that ATM and frame relay are regarded by many to be legacy services with a limited lifespan.

But healthy growth in ATM services does not necessarily translate into higher ATM equipment spending or revenue growth, Roseboro notes. Service providers could just be turning up new service ports on equipment they purchased months or years ago, she says.

"We're not going to see huge overbuilds like we have in the past," she says, adding that service provider spending on equipment won't pick up again until at least mid-2002. ◪

Start-up metro network firm seeks new niche

Overture Networks looks to be first pure IP vendor.

BY TERRI GIMPELSON

RESEARCH TRIANGLE PARK, N.C. — Start-up Overture Networks is looking to build a niche for itself in the crowded metropolitan optical equipment space — that of a "pure" IP systems vendor.

Despite the billions of dollars of installed SONET equipment and infrastructures, Overture believes carriers are looking toward a new market with IP-based networks.

"It costs less and it can enable new network services," says Dale Graver, Overture vice president of marketing and business development. "IP networks are easy to provision, quick to deploy, easy to manage, and equipment costs continue to drop."

But Overture is not espousing a radical replacement of SONET rings. Rather, "we think these carriers will start looking to try gigabit overlays in their existing SONET networks," he says.

Overture is remaining quiet about its first product announcement, the IP Services Gateway, which is slated to be in beta-test in several carrier networks later this year. Graver says the company is expecting general availability of the box by year-end or early next year. The product is targeted at fiber-based carriers looking to deliver voice and data services, such as the incumbent local exchange carriers, interexchange carriers, competitive local exchange carriers and new IP-centric carriers.

The company recently announced completion of its Series A round of funding for $3.4 million. It is now in discussion for Series B financing.

Formed in September 2000, the company has 12 employees. It was founded by Jeff Reedy, CEO, and Prayson Pate, vice president of engineering. Graver holds the third executive position.

Overture Networks: www.overturenetworks.com


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R16-GSFEM-08
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Introducing the RS 16000 from Riverstone Networks. It's the new generation of router built expressly for Gigabit and 10-Gigabit Metropolitan Area Networks. The chassis-based RS 16000 delivers up to 60 wire-speed Gigabit ports, along with 10-Gigabit Ethernet and CWDM uplinks all in 5 rack units – that's 70% more Gigabit ports per rack inch than the nearest competitor. For service providers, this means more revenue per rack and lower operating costs.

But the RS 16000 is more than the highest density router in the industry. As a full function, Internet-caliber metro-optimized router, it also delivers rich service creation capabilities. Through hardware-based MPLS, bandwidth carving, and extensive billing and accounting, the RS 16000 converts raw bandwidth into profitable services for carriers throughout the Metropolitan Area Network.

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Briefs

InfoExpress has shipped a new version of its personal desktop firewall, **CyberArmor 2.0**, that includes a wizard to let systems administrators develop security policies for end users, as well as a digital signature feature to be used by authorized staff to activate policy changes. The CyberArmor desktop firewall software costs $59 per seat. Desktops are remotely administered through PC-based CyberConsole software ($300) and Policy Manager ($1,000) to create and manage policies and automate updates. The fourth component is the CyberServer database ($5,000), which runs on Windows NT/2000 to log events.

InfoExpress: www.infoexpress.com

NetGenesis last week announced Version 5.5 of its Web analysis software, which now includes a reporting feature that can track user behavior on the main Web site, related subsites or specific pages. Users can now also track the patterns of site visitors across multiple sites. The company also enhanced the software to more quickly and accurately identify site visitors to let companies correlate the visitors' buying behavior offline and online. NetGenesis also included embedded privacy features that implement P3P-compliant privacy policies, such as anonymous user and opt-out options. NetGenesis supports Windows NT/SQL Server and Sun Solaris/Oracle database platforms, and the company says it plans to add support for IBM AIX/DB2 platforms shortly. NetGenesis offers a starter package that costs about $100,000; the standard version costs $160,000; and the enterprise edition costs $250,000.

NetGenesis: www.netgenesis.com

IN-SITE: *Lessons from Leading Users*

Streaming media opens Wisconsin legislature

BY JASON MESERVE

Streaming media is doing for the Wisconsin State Assembly what C-Span did for the U.S. Congress: letting constituents see the floor debates and votes on bills and potential laws that are important to them.

For the past 2 1/2 years, the Assembly has been streaming audio versions of its debates over the Internet. In January, the legislative body added video, allowing viewers to see as well as hear what was happening on the Assembly floor. The Assembly takes the C-Span concept one step further by letting viewers see all the documents pertinent to the debate as they watch the video.

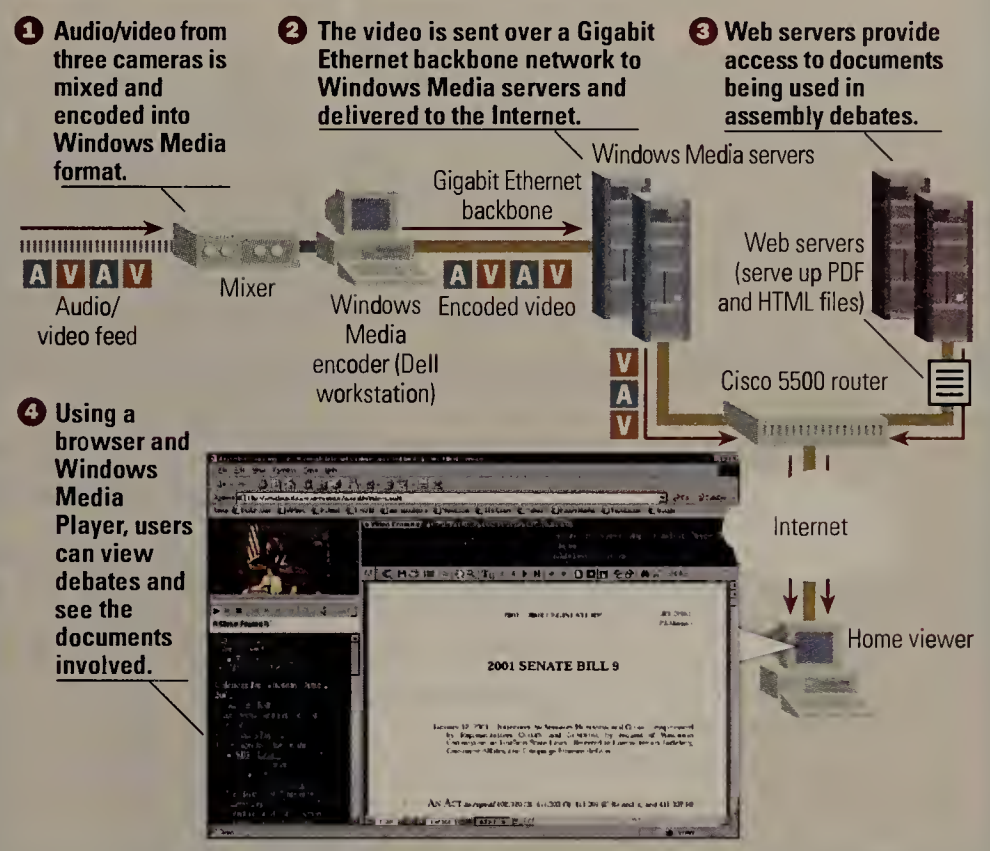
"We've made all the distributions in the Assembly digital, so when members get them, you can get them over the Web," says Steve Baas, the press secretary for Assembly Speaker Scott Jensen. "It's like having a virtual seat on the Assembly floor, complete with everything but the voting button."

Baas said the Assembly had been using the same system of paper and human couriers since the state was

See **Wisconsin**, page 30

Wisconsin State Assembly

Streaming media opens the state legislature so that anyone with an Internet connection can see the daily law-making process.



Software tackles CRM for professional services firms

Interface Software emphasizes contact management rather than salesforce automation.

BY ANN SULLIVAN

CHICAGO — There's nothing like a corporate spinoff to jump-start a company's customer relationship management project.

When Adams Street Partners gained independence from its parent company in January, Brinson Partners, the asset management firm took with it a Microsoft Excel file detailing 10,000-plus contacts culled from Brinson's CRM package. The customer data quickly became fragmented as various departments started working with subsets of clients, says Adams Street partner Miguel Gonzalo.

Meanwhile, the Chicago firm was searching for CRM software to consolidate the pockets of data and streamline marketing efforts. It recently settled on InterAction from Interface Software.

InterAction is aimed at professional services businesses such as law firms, financial services companies, and architecture and engineering firms. It differs from traditional CRM software because its emphasis is on managing client information — personal contacts, correspondence with clients and internal firm expertise — rather than managing product transactions and sales leads.

InterAction sits on an application server in front of a Microsoft, Oracle or Sybase database server. It can extract and consolidate into a single repository data from third-party sources including Microsoft Exchange and Lotus Notes, human

See **Interface**, page 30

'Net Insider . Scott Bradner

MAPPING A WAY FORWARD

I travel too much, far too much! (I got my "million mile flyer" card from United Airlines the other day — I would have put in about three months seat time if everything had been on time, but probably put in twice that in reality.) Most of the time I need to drive somewhere when I get to the destination airport. Figuring out how to get from the airport to my actual destination — usually some generic hotel room — has often been quite a pain. The Hertz computerized directions do help, but too often I forget to stop and get them, and anyway, I'm one of those people who needs a picture to really be able to understand where things are.

I've come to depend on MapQuest (www.mapquest.com) as a basic travel tool. It's a remarkable service, made even more so with its access to aerial photos and worldwide coverage. But I do worry if it will be around for as long as I will need it.

MapQuest is better off than many Internet-based service sites because it's part of a larger company with actual, real revenue. A year ago MapQuest was purchased by AOL in a stock swap that is worth only a bit less now than it was when it was completed. MapQuest also seems to have a business model that's a little broader than the all-too-many Internet sites that depend totally on advertising.

Having a pure advertising-based model is not a good thing to do in an environment where the advertisers can find out reasonably easily how well Internet advertising does not work. MapQuest augments its advertising revenue by selling mapping-related services such as click-on maps to businesses. But with only 1,800 customers, I don't expect that these services bring in all that much in comparison to MapQuest's expenses.

The ads on MapQuest's site can be a bit strange, too. One of the ads I got in looking up a technology company in Texas included a way to find nearby NesQuick retailers — not a connection I would have quickly come up with. I wouldn't think that the ads bring in all that much, either.

So what is a good way to get such a service paid for? The MapQuest Web page talks about what MapQuest brings to the AOL table: "Combining the AOL service and brands with MapQuest's online mapping products greatly increases the convenience and value of the AOL membership." As long as AOL thinks that, I would expect MapQuest to be around, but banking on intangibles is a risky future-proofing strategy.

MapQuest is not quite representative of the average Internet service, because it is part of a bigger company, but if it's hard to figure out a solid financial basis for MapQuest, what is the prognosis for stand-alone sites? I sure hope someone figures out how to do Internet micropayments soon, as I'm quite willing to pay for services of this quality. I do not see much other hope.

Disclaimer: Harvard and "micropayments" do not belong in the same concept, so the above ramble is my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

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continued from page 29

established 150 years ago." [The old way] was expensive and wasteful, and the speaker thought some of this technology stuff could help internally and open up the process externally to the general public in ways that would have been unimaginable eight to 10 years ago," Baas says.

"The speaker worried about the cost of the technology, but we bought a three-camera system with mixer and servers for $22,000," says Mark Wahl, director of the state's legislative technology services bureau. Plus, the legislature is saving $100,000 over two years by going paperless.

To fund the purchase, the legislature's appropriations committee had to approve the expense. The debate was split not by Republicans vs. Democrats, but more "techies vs. nontechies," Baas says.

Now instead of passing out paper to all 99 Assembly members, each carries a laptop to view all documents related to the bill being debated. A Web server pushes documents out to the public, while three video cameras (one unmanned and two manned) capture the action on the floor. A video mixer coordinates the shots, and the resulting video is encoded into Windows Media format using a Dell Pentium III 420 workstation running Windows 2000.

> ***"We get more correspondence in this office that says the constituent was watching on the Web or saw this on our Web site. It's really helped open the government."***
>
> Steve Baas, press secretary for Wisconsin State Assembly Speaker Scott Jensen

Originally, the debates were streamed in the RealAudio format, but the initial 30-simultaneous-user license for the server quickly maxed out, Wahl says. Windows Media does not charge on a per-user basis, making it a cheaper alternative than RealAudio, which charges based on the number of simultaneous users. (RealAudio is still offered, but is limited to 30 simultaneous listeners — the original license purchased.)

Wahl's group hosts all the streaming itself using a Compaq Pentium III 550 Server for unicast broadcasts to the Internet and an Omnitech Pentium III 450 server for multicast broadcasts on the internal network. Both servers are running Windows 2000. The two main Cisco 5500 routers are multicast-enabled. Viewers online get video served at about 100K bit/sec and 12 to 15 frames per second.

About 100 to 150 people is the average viewing audience for most debates, but when the Green Bay football stadium bill (a plan to renovate the Packer's famous home, Lambeau Field) was debated early last year, 2,000 to 2,500 tuned in. "We get more correspondence in this office that says the constituent was watching on the Web or saw this on our Web site. It's really helped open the government," Baas says.

The next step is to create a video archive of the debates, so viewers can tune in after the fact. "It makes things more accessible from a time standpoint," Wahl says.

Wisconsin State Assembly: www.legis.state.wi.us/insession/assembly/

Interface,
continued from page 29

resources applications and accounting systems. Using Java and XML, InterAction delivers data through a Web browser to client PCs, wireless devices, or a corporate intranet or extranet.

When a user updates a client's contact information, the software makes the revised data available to linked third-party applications. It also ties duplicate names — John E. Smith, Jack E. Smith and J. E. Smith, for example — to a single contact. In addition to contact management, InterAction can track referrals, check for client conflicts and report firm expertise by industry. Security controls let users protect confidential client information while making unrestricted data available companywide.

Accuracy and administrative efficiency are two reasons MWH Energy & Infrastructure deployed InterAction. Before InterAction, the company mailed its annual review by manually compiling and verifying multiple contact lists, says Claire Dewar, manager of applications training and IT projects delivery at the environmental engineering firm. "With over 30 administrators and 30 different lists, this task took about 320 hours over four months to accomplish," Dewar says.

"The annual review mailing list now takes two hours to assemble," she adds.

Dewar says the security features that allow users to keep data private have encouraged uses that go beyond managing contact information to keeping track of conversations, faxes sent and letters mailed in InterAction. "Having the ability to keep that information private to a select group of people has been key in getting this sort of data in the system," Dewar says.

MWH Energy & Infrastructure considered competing contact management products, including ACT from Interact Commerce and GoldMine from FrontRange Solutions, but chose InterAction for its scalability and security features, Dewar says. The company has been using InterAction since 1999; its contact list has grown from 8,000 records to 35,000.

Implementation is under way at Adams Street Partners, and Gonzalo expects the firm to be up and running with the software by the end of September.

Per-user InterAction licenses cost $389; server licenses range from $60,000 to $250,000.

Interface Software: www.interfacesoftware.com

Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

Ask Dr. Internet

By Steve Blass

The latest server virus alerts are making us nervous. We patched our servers and want to ensure quality of service (QoS) between our Internet-connected sites so our important network traffic will get through in time, even when the Internet is slow.

It's good that you keep up with the security patches for your Internet servers. Most successful online attackers gain entry through well-known, unpatched holes for which solutions exist. Everyone should ensure that their system administrators can keep up with server operating system and security update patch installations.

Ensuring QoS between multiple Internet connected sites is difficult because TCP/IP is a best-effort datagram delivery service. Carriers provide network traversal service-level agreements, but you're at the mercy of their implementation and all the physical networks your traffic rides on to guide your data packet to its destination in time to meet your QoS requirements. How to deliver guaranteed QoS over the Internet remains unclear, but we call it Multi-protocol Label Switching (MPLS). When the standards are standard we may have something. Until then, ensuring Internet QoS means having realistic expectations, buying Internet connections that minimize the number of peering points crossed, and minimizing the data transfer requirements of your business tasks.

Blass, a network architect at Change@Work in Houston, can be reached at dr.internet@changeatwork.com.

Dual-chip architecture for mobile devices

BY SEBASTIEN DE GREGORIO, MADHUKAR BUDAGAVI AND JAMIL CHAOUI

As real-time, multimedia-rich applications such as video-streaming emerge in the next generation of smart phones and advanced mobile Internet appliances, the processing platforms that power them will need to be capable of processing more than ever before.

The processing demands placed on the engines and system architectures will escalate, as will the need to maintain or extend battery life so consumers can enjoy these new applications.

The challenge in the case of streaming video is the amount of bandwidth required to provide a real-time instantaneous datastream.

Streaming video also requires an engine capable of processing the videostream while performing other tasks. Designers of 2.5G and 3G platforms need to base their architectures on scalable and easily expandable concepts so new technologies and applications can be deployed quickly in response to changing market conditions.

A dual-processor architecture with a general-purpose or Reduced Instruction Set Computing processor and a digital signal processor (DSP) meets these needs better than a general-purpose processor.

As the computational and other capabilities of a wireless system increase to meet the requirements of streaming video applications, a partitioning of tasks between the two processors becomes more important. After all, who wants to watch a few minutes of video on a wireless device before it runs out of batteries? The system runs more efficiently when tasks are assigned to the processor best suited to the job.

For example, a DSP is better at processing the highly complex algorithms that make up the pictures and sounds of a music video clip, while a general-purpose processor is better at finding and retrieving a phone number. Divvying up these tasks to the processor best equipped to handle them will reduce power consumption and extend battery life. 2.5G and 3G wireless devices will have to provide expanded multimedia capabilities while keeping in line with the power expectations customers have come to expect from cell phones and PDAs.

As simple as dual-processor architecture may seem, it can pose challenges for wireless designers. Shared memory must be managed to avoid conflicts involving processors accessing the same memory location at the same time. Another challenge of dual-processor architecture is the difficulty that application developers may experience as their programs move across borders in the wireless architecture.

One solution is to create a high-level abstract layer — a bridge architecture — to which designers would develop applications. This would free them from having to delve into the details of the processors' operating characteristics and parameters.

With this bridge, a designer would develop programs in a high-level language for the architecture's general-purpose processor. When the DSP was needed to perform a task, the designer could call up the DSP through the high-level interface and application protocol interfaces present on the general-purpose processor. A programmer using this design could issue a command for streaming video and the bridge architecture would automatically assemble the resources needed for the task and relieve the designer of this responsibility.

If recent market trends are any indication, wireless communications technology will continue to advance at a rapid pace, but power consumption will always be a critical factor. Handheld, battery-powered systems can function only as long as their batteries last.

Batteries that can store more power would help, but a battery's capacity has physical limits. Ingenious wireless system designers can always reduce power consumption through architectural innovations and sound component selections.

De Gregorio is European wireless video development manager at Texas Instruments; Budagavi is a member of the technical staff at the digital signal processor research and development center at Texas Instruments; and Chaoui is worldwide OMAP software application and development manager at Texas Instruments. They can be reached at kbengtson@ti.com.

Dual-processor architecture

Using two processors — one for real-time video, one for nonreal-time tasks — can improve the functionality and battery life of handheld devices.

1. **An end user with a 2.5G or 3G smart phone wants to view a video clip. His request is forwarded to his network's operating system.**
2. **The operating system passes the command to the bridge architecture, which is programmed to assign real-time tasks to the digital signal processor (DSP), which is optimized to handle complex algorithms associated with real-time video.**
3. **The end user wants to look up a phone number in the database.**
4. **The bridge architecture passes this task on to the general-purpose processor.**

PHOTO: DATAPHONE

Got great ideas?

Network World **is looking for great ideas for future Tech Updates. If you've got one, and want to contribute it to a future issue, contact Features Editor Neal Weinberg (nweinberg@nww.com).**

Gearhead . inside the network machine . Mark Gibbs

YET MORE FTPING

Week 3 of FTPing and, boy, is this getting exciting! We've opened connections to FTP servers, given commands to set up data transfers, sent other commands to find out what files the servers have and issued commands to navigate around the server's directory structure. We can hardly contain ourselves!

Anyway, now we should look at transferring files. To this end, we need to set up the transfer mode.

FTP servers can — at least according to the standards — transfer data in three ways: stream, block transfer and compressed transfer.

Stream mode involves the server sending or receiving a sequence of bytes without any kind of verification that the data is intact or even received.

Worse still, the recipient assumes the transfer is complete when the stream ends, which means that a lost connection can't be distinguished from completed transmission and even if the file is really complete, we can't be certain without additional validation that the file is uncorrupted. But the advantage is that stream mode is fast.

When we want to transfer a file, we open a socket on the sending machine and another on the receiving machine and shove data down it until we run out of bytes. Then we close the channel. Unlike the other transfer modes, we need to open a new connection for each file we send.

The alternatives to stream mode are uncompressed or compressed block transfers. And, as you might guess, block transfers have more overhead than stream transfers, and compressed transfers are the most laborious of all.

Unlike the stream transfer mode, the other modes can send multiple files over a single connection.

The overhead is the work required to check the packets or blocks of data as they are sent and as they arrive. Plus, there's the overhead in terms of bytes of data required to control and validate the blocks. Of course the compressed version regains a few bytes, but the cost is extra processing for decoding the compressed data.

Which mode should you use? The first issue to consider is whether the FTP server supports anything other than stream mode. It turns out that many vendors only implement stream mode, so check your server first.

How can you check what the server supports? You could pick up the manual (yeah, we agree, who needs manuals?), or you could ask a knowledgeable user (no, no, stop yourself) or find the system administrator, but it would be easier to simply ask the server.

All you need to do is telnet to an FTP server (don't forget to connect to port 21) and enter the command "mode" with an argument of S for stream, B for block or C for compressed. Thus, if it responds with a 200 the mode is supported. If it responds with a 502 the mode is not supported. You will see responses like "200 MODE S OK" or "502 Unimplemented MODE type."

If other modes are supported, choose stream mode for raw speed (but be ready to integrity check files), block mode for general-purpose use and compressed mode for ASCII files (alphanumeric content compresses wonderfully).

Darn, still haven't managed to send or receive any data yet . . . oh, well, there's always next week.

Transfer your thoughts to gearhead@gibbs.com.

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Opinions

Editorial

Storage smackdown amid the lights of Vegas

Storage demands are skyrocketing as companies scramble to stay in front of a data tidal wave pushed by everything from e-mail to CRM. In some companies storage requirements are doubling every year.

Fortunately the options for dealing with the flood are rising just as fast. The latest buzzwords include iSCSI, Direct Access File System, network-attached storage (NAS), storage-area networks (SAN), InfiniBand and virtualization.

What technology is best for what situation, where and when? How do these various piece parts fit into a cohesive enterprise storage plan?

We aim to find out at Comdex in a keynote panel session called Enterprise Storage Smackdown, a Network World event featuring industry heavyweights in a presidential-style debate.

Who could resist the smackdown wrestling metaphor given the often contentious "discussion" about what approach is best. This will be a no-holds-barred free-for-all that will help strip away the marketing yap and show the players and the various technologies they hawk for what they are.

We hereby challenge EMC, IBM, Network Appliance, Veritas and Brocade to send a top technical executive to participate in the storage smackdown.

Why these vendors? EMC is invited because it is the granddaddy of storage; IBM is a huge player with its toes in iSCSI, NAS, SANs, InfiniBand and virtualization; Network Appliance is the leader of the NAS camp; Veritas tops the software storage management market; and Brocade is the leading SAN supplier.

We need to hear back from these vendors by Sept. 17. If some don't rise to the challenge, the door will be open to companies such as Compaq, Hewlett-Packard and newcomers DataCore and FalconStor.

I'll be joined on stage by John McArthur, vice president of storage research at IDC. We'll kick off the session — which runs from 4 to 5 p.m. Wednesday, Nov. 14, at Comdex Fall in Las Vegas — by grilling the vendor panel. McArthur and I will then referee a 20-minute session during which vendors get to question each other, and finally we'll throw it open to questions from the audience.

Stay tuned to see if these vendors accept our challenge, and send me questions you would like to see debated.

— John Dix
Editor in chief
jdix@nuw.com

Message Queue

Advice to Novell

Regarding your Q&A with new Novell CEO Jack Messman (www.nwfusion.com, DocFinder: 5422): I don't think Novell stands a chance of becoming successful again because, despite all the shakeups and changes, Novell still keeps neglecting one important facet of business — marketing.

Back in the 1990s, two of the three largest companies based on market capitalization were two marketing giants — Coca-Cola and Microsoft. Coca-Cola made billions over the decades convincing us to buy carbonated sugar water. Microsoft made billions convincing us we couldn't live without their buggy, expensive, proprietary operating systems. What was Novell's marketing strategy during the 1990s? "We're No. 1 in networking and people will always buy from us." Obviously that strategy didn't work then and doesn't work today.

What has hurt Novell the most is its refusal to aggressively market its products. NetWare has always been faster and more stable than Microsoft NT. GroupWise has always been resilient to viruses, unlike Outlook/Exchange. The bottom line is it doesn't matter how good your product is if you never let the people with the money know about it. Microsoft has proven time and again that you don't have to make good products to be successful; you just have to aggressively market them.

Novell's lack of marketing has hurt not only the company but also the people holding Novell certifications. If you go to any employment Web site and search for jobs on NT and NetWare, you will find about a 10-to-1 ratio, and the NT jobs pay more. There again Microsoft marketed the importance and value of its certification program and Novell didn't. I hold eight Novell certifications, including Master Certified Novell Engineer, and over the years I have watched the professional and economic value of these certifications drop to nothing. Two of my Novell certifications are from the company's Certified Internet Professional program. I bet most people have never heard of this program, but then again Novell never marketed it except to people holding Novell certifications. As far as I'm concerned, if my employer doesn't send me to training when (or if) NetWare 6 is released, then Novell can have my useless certifications back when the continuing certification requirement expires.

Jon Banks
Powder Springs, Ga.

The European view

Regarding "Fear of DSL market pushes cable to the forefront" (www.nwfusion.com, DocFinder: 5423):

It's amazing how different the water temperatures are when it comes to broadband penetration in the U.S. and in Europe. I am an American living overseas and right now DSL and cable in my area seem to be waging a battle of equals. Belgium already had a decent cable infrastructure, so penetration exceeds that of DSL, but DSL is catching up quickly. The complicated order and installation process that the U.S. is experiencing has been all but circumvented over here. I went online, entered my phone number, was cleared for access, signed up for the service, ordered and purchased the equipment. When it arrived three days later, I had it installed and up and running in 5 minutes — no visit from the phone company required. A friend of mine in the U.S. has been waiting three months for someone from the phone company to show up and install his DSL connection. Europe gets accused of having too many layers of administration and bureaucracy, but in this case, DSL is flourishing because the phone companies have made it almost as easy as plugging in the telephone.

Bill Daunch
Brussels, Belgium

Other applications

Regarding "Linux lends a hand to Sun engineers" (www.nwfusion.com, DocFinder: 5424): I can see other applications for the new appliance. Inventory control, where several government agencies own equipment in a facility, would be one example. Another would be as a tool to communicate with and supervise a maintenance staff.

Ensley Feemster
Computer network specialist
Tri-County Technical College
Pendleton, S.C.

E-mail letters to jdix@nuw.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

User View . Chuck Yoke

SHEEPDOG MANAGEMENT: NIP THEIR HEELS AND KEEP 'EM MOVING

As a manager, I have experimented with a number of management theories and strategies. I have tried micromanagement, delegation and empowerment. I've played around with Theory X management techniques — "crack the whip" — and Theory Y techniques — "you love your job and want to work so I'll just leave you alone." I've had resounding success with some techniques and dismal failures with others. What works for one project or team may not work for another.

In an ongoing attempt to find a management technique that can be used across the IT board, I've studied management theorists, philosophers, psychologists and military leaders. However, my newest inspiration comes not from man, but from man's best friend — the dog. Specifically, the sheepdog.

The sheepdog does not try to manage each sheep individually; rather, he is concerned with moving the entire flock toward the desired goal. He does this by setting up boundaries, keeping the sheep within the boundaries and nipping at the heels of stragglers to get them moving. Within the flock there is a degree of freedom to move about, and the sheepdog allows this "chaos in motion."

Technical personnel are a lot like sheep in this regard. They need a certain amount of freedom. They want to have their voices heard, their experience respected and their knowledge utilized. Additionally, many want to have a certain amount of control — whether it is over their work hours, their systems or their networks.

A manager who tries to use a "command and control" style of management is doomed to failure. Just as a flock of sheep scatters in all directions when a sheepdog dives into the middle of it, so too will a team of experienced technical people scatter when a manager dives in and tries to exert control over every aspect of their job.

About a year ago I was pressured to go back into the command and control mode and "whip the troops into shape." The results were dismal. Morale became low, key personnel left and the remaining staffers became bitter and uncooperative. It wasn't until I loosened the reins that I had any success.

The successful technical managers are those who acknowledge their team's expertise, respect their opinions, request and use their advice, and provide an atmosphere that is conducive to creative expression.

Some of my most successful projects have involved teams that from the outside appeared to be very chaotic. And in truth, there was a certain amount of chaos. In fact, I even encouraged it. Chaos is creativity in action. As Nietzsche said, "Out of chaos comes order."

Good technical managers do not try to control their teams. Instead, they try to move the team forward. Just like the sheepdog, these managers set up boundaries, allow their teams a certain amount of freedom within those boundaries, and strive to move the team as a whole to the stated goal. They may nip the heels of the stragglers every now and then, but their focus is on guiding, not controlling.

Yoke is an IS manager in Denver. He can be reached at ckyoke@yahoo.com.

Yankee Ingenuity . Howard Anderson

BEING AN INDUSTRY GURU HAS GOTTEN A LOT HARDER

It used to be a lot easier.

Predicting the future, that is. Being an industry guru was a fun job. The *Wall Street Journal* or *The New York Times* would quote you, your mother could brag to the relatives and you could sit on lots of panels in technical meetings. You said things, and everyone nodded and actually wrote down what you said. Paid well, no heavy lifting.

In the old days, all you had to do was understand the dominant company in the sector, such as IBM or AT&T. If you knew where the gorilla company's development was going and where they were avoiding spending, you could predict where and how future technologies would fall.

Then it started to get harder to be a respected guru. More innovation was coming from outside the major companies, so to be ahead of the curve you had to suck up to the academics. Places like MIT, Harvard and Stanford led the way. These universities were the first to deploy routers and embrace Unix. The academics had lots of brains but not a lot of money — unless that money was coming from the government.

But if you were alert, you could still figure out the next movement and maintain your guru credentials. All you had to do was carefully watch when the investment banks started to deploy new technologies. These bankers were another group with lots of smarts — and an unlimited budget. And you wouldn't have to watch the whole organization — just the most demanding internal users, such as the traders at Merrill or the arbitrageurs at Bear Stearns. These power users and subgroups could have anything they wanted, so they were the first to embrace workstations and networks, and do neat things with databases and storage.

By 1990 predicting the future started to get harder. Enter the venture capitalists. In 1996, new venture investments were $6 billion. Last year they were $104 billion. The venture industry had replaced the U.S. government as the largest supplier of research and development dollars. Originally most of this money was aimed at the enterprise market, but increasingly by 1997 it was honed toward the carriers — so we were shoveling money in optical networking and Gigabit Ethernet. Many of the advances in corporations were just dummied-down versions of what the carriers had been deploying. T-1, inverse muxes, call centers — all were technologies that first started as products for carriers.

But now the spending binge is over. The carriers have cut back their spending 15% this year over last, and next year we expect them to cut back another 15%. The carrier's debt has gone from $235 billion to $700 billion in just three years. All those technology companies making a "god" switch they hoped to sell to all the CLECs and LECs have found the carrier doors closed. We have too many metro optical companies and technical standards, and too few buyers. We have Bluetooth, Wireless Application Protocol, 2.5G, 3G, 802.11 and 802.16. Sometimes I think the entire standards movement is a thinly disguised front for getting more people to fly Swissair.

So if the carrier market is closed for a while, then the gurus will go back to the enterprise companies. Or maybe not. Pity the poor enterprise user. It is no longer possible to make decisions based on best of breed, which used to be one of the key criteria. Why not? Because the best-of-breed firm may not get funded, so if you choose them they just may not be around next year, causing your boss to look at you slant-eyed and question your competence.

Suddenly, being a guru just isn't as much fun. People are starting to keep track of your predictions, and the old methodology just isn't working. The government is no longer the serious funder of academic communications and computing it once was. The academic community isn't sending a clear signal as to its direction. There no longer is a single dominant company in technology. And now the market researchers are having difficulty predicting what the future will look like because they have no idea where the fickle venture capitalists will be investing next year.

Like I said, it used to be a lot easier. If you don't know where you're going, then any road will take you there.

Anderson is senior managing director of Yankeetek Ventures, a Cambridge, Mass., early stage venture capital firm. He is also founder of The Yankee Group and the William Porter Distinguished Lecturer at the Massachusetts Institute of Technology. He can be reached at handerson@yankeetek.com.

Feature

The great global 3

Network problems delay launch of third-generation wireless services.

BY EVAN ROSEN

A small island in the Irish Sea and the island country of Japan are vying to become the first to host 3G wireless services, which bring multimedia applications to mobile phones.

Teams of engineers on the Isle of Man, a self-governing British territory, are working round-the-clock to roll out 3G commercially by late summer. Manx Telecom, the British Telecom subsidiary that serves the island, was originally slated to launch 3G in May, but that date slipped due to technical problems.

Japan's NTT DoCoMo was also scheduled to introduce 3G in May in Tokyo, Yokohama and Kawasaki, but postponed its full-scale commercial rollout to October to iron out problems with the handsets and with the network.

On May 15, Manx Telecom tested handsets and made its first 3G voice test call on the Isle of Man, and the project team made its first public 3G video call in late June. While there have been some reports about handset problems, Manx Telecom insists that the test call worked fine and the only remaining issue is the radio network controller (RNC), which affects network stability. The RNC synchronizes traffic from all the wireless base stations.

"That's what's concentrating most of our efforts. Once [the RNC] is cracked, the core technology is not that much different than current wireless networks," says Mark Briers, 3G project leader for Manx Telecom.

Similarly, DoCoMo is working out the bugs in a small pilot project in Tokyo that's limited to 4,500 customers. DoCoMo scaled back its May 30 launch after early users reported the handsets froze and had to be reset, that only 50% of attempts to connect to the network were successful and that batteries lasted less than a day.

Isle of Man pushes for 3G

The Isle of Man has gone to great lengths to become a 3G mecca because business leaders there believe that offering 3G will increase economic development.

"3G has provided us with a tremendous profile boost. It's really put the Isle of Man on the map," says Tim Craine, director of e-commerce for the island's chief secretary. Craine's job is luring companies to the island by promoting a state-of-the-art telecommunications infrastructure; a high-bandwidth, self-healing fiber ring; a legal and political climate favoring e-commerce; and the world's first 3G wireless service.

Late last year, the government began paying to install asymmetric DSL (ADSL) and ISDN in homes and businesses. Flat-rate Internet access using those services costs less than $11 per month.

The government has an even more generous policy toward license fees for 3G. Five bidders each paid more than $6 billion to win the right to offer 3G services in the U.K., but the Isle of Man handed Manx Telecom a license for free. "It was a deliberate government policy to keep the cost of the 3G rollout down by not charging for the license," Craine says.

Manx Telecom plans to offer businesses and home users a host of 3G services over mobile phones, including uploading and downloading data, viewing still images, viewing video clips and videoconferencing.

Like ADSL, Manx Telecom's 3G service is asymmetrical, meaning the download speed is greater than the upload. Users can get a maximum bandwidth of 384K bit/sec to the handset and 64K bit/sec upstream. This is optimized for most data transmissions. However, videoconferencing typically requires the same bandwidth in each direction. Therefore, the bandwidth will drop to the lowest common denominator of 64K bit/sec in each direction for real-time video.

Videoconferencing will require that users connect their 3G phones to a separate video device about the size of a PDA that features a 2 1/2-inch color screen and a camera. The video unit will plug into the 3G handset via a universal serial bus (USB) port. Eventually, Manx Telecom will switch from USB to Bluetooth, the specification

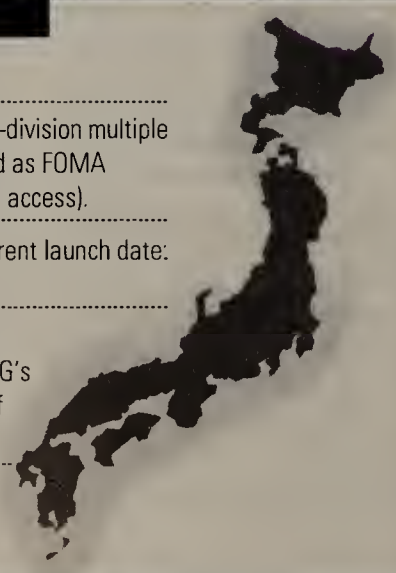
Japan

Who: NTT DoCoMo

What: 3G or WCDMA (wideband code-division multiple access) service being marketed as FOMA (freedom of mobile multimedia access).

When: Original launch date: May. Current launch date: October

Apps: DoCoMo is focusing on the entertainment angle, touting 3G's ability to provide downloads of music and video clips.



G challenge

Once Manx Telecom launches its 3G service on the Isle of Man, project leader Mark Briers will be able to watch sporting events and place bets without leaving his seat.

Isle of Man

Who: Manx Telecom (a subsidiary of British Telecom)

What: 3G or WCDMA

When: Original launch date: May. Current launch date: late summer

Apps: Manx Telecom is focusing on applications such as gambling, online banking, emergency medicine and virtual house tours.

for wireless peripheral connection.

Apps are everything

Manx is working with a host of companies that are designing 3G services, including stock trading, gambling and police surveillance. "We are bringing some real applications to the party to try to stimulate use," says Phil Taylor, marketing director for ImageCom in the U.K. The company is providing the videoconferencing technology used in the Isle of Man 3G project. The video codec is based on the H.323 international standard for videoconferencing over packet-switched networks.

Nationwide Building Society, a U.K. financial services company, is banking on 3G as an extension of e-business and a corporate productivity booster. "For any field-based role, you could certainly see the application for 3G," says Jim Willens, Nationwide's e-commerce director. "It provides a way that mobile workers could be connected into [the] LAN without going into the office."

Willens believes 3G could help Nationwide create "virtual call centers" in which customer service representatives could answer calls from anywhere while reviewing customer account records on screen. "We sometimes have difficulty with recruitment. Being able to locate virtual call centers would be very attractive to us," Willens says.

Nationwide may also use 3G to enhance the experience of potential mortgage customers. "3G allows you to do these things: 'Here's the house, here are the people who can move you into the house.' " Willens says. "The presentation holds our interest. We are very visual."

Another potential use of 3G for Nationwide is in providing a more robust help function for online transactions. Customers with questions could connect via video to a customer service representative who could walk them through a transaction.

"Video could improve the quality and depth of help, marketing and personalization," Willens says.

Nationwide also views 3G as a way to save IT dollars. "If you look at what people now have on their desks, the power of the equipment and the use of it, it's probably 85% underutilized . . . whether it's hardware or software," Willens says.

3G could also eliminate redundancy in mobile devices. "I'm guilty. I carry a mobile phone, a pager, a PocketPC and a

laptop. Is all this really necessary?" he wonders. Nationwide believes 3G could ultimately deliver "massively attractive" savings in IT spending.

While IT planners are evaluating corporate uses for 3G, "the volume will eventually become the consumer user. 'Look at the beach I'm on. . . . Look at this tie I'm looking to buy,' " insists Taylor of ImageCom. In the consumer realm, Manx Telecom is banking on so-called location-based services. This involves pushing offers and inducements to consumers based on where they are. For example, if a consumer approaches a fast food restaurant, a 3G device might display an offer for a discounted meal. Virtual tour guide services will let people examine hotel rooms, golf courses and tourist attractions from their devices before booking accommodations or buying tickets.

Wagering on 3G

One company hoping to capitalize on 3G is Bet Internet of Isle of Man. Through its Web site, the company lets users gamble on global sporting events, such as horse racing, cricket, soccer and basketball. "The ability to provide pictures makes an order of magnitude difference in people's habits. They are more likely to wager," insists Bill Mummery, technical director of Bet Internet.

A joint venture of Bet Internet and the Greyhound Channel, of Portland, Ore., owns the rights to distribute video from 28 greyhound and thoroughbred tracks in the U.S. 3G will let fans view races and bet from trains, cars and street corners. Mummery says people in the stands will use 3G. "They don't have to get out of their seats and fight their way to the betting window," he says.

A key to success with 3G is billing simplicity. That's why Manx Telecom is partnering with London's Cerillion Technologies to create an integrated 3G billing system. For example, rather than using a credit card for each service, the consumer would pay once monthly for 3G connectivity plus services such as playing video games or downloading audio and video clips. Users could view their transaction details on their 3G mobile devices. They could also use their 3G phones to pay their Manx Telecom bills.

DoCoMo draws close

In Japan, NTT DoCoMo is dealing with the disappointment of delaying the commercial launch of its 3G service, marketed as FOMA (freedom of mobile multimedia access). Nevertheless, the company has selected "monitors" who are evaluating the service this summer before the rollout. DoCoMo is providing free handsets and is waiving monthly fees for the monitors. It has received nearly 150,000 requests from prospective monitors but is distributing only 4,500 3G handsets: 2,000 to individuals and 2,500 to corporate subscribers.

DoCoMo is offering three models of 3G phones: an upgraded model of its current mobile phone featuring higher-quality audio, a "visual" model with a video screen and a "datacard" version for high-speed data transmission. Sixty percent of those applying for handsets want the visual model. But that version's debut is running a month behind the others because of debugging delays.

Shiro Tsuda, DoCoMo's executive vice president in charge of networks, recently announced that the network is becoming more stable and that DoCoMo plans to meet its October target date for a full-scale rollout.

Tsuda says the two major problem areas with the network are the switching system that controls the connections, and the "handovers" that occur when a user moves from one base station area to another.

As the race to be first in 3G enters its last lap, the British and the Japanese carriers are being cautious. "We don't want to be the world's first operator to discover all of the problems," Briers says.

He says while Manx Telecom is vying to be first, it is more important that the British Telecom subsidiary create a viable 3G showcase for its parent company. British Telecom plans to launch 3G in the U.K., Germany, Ireland and Holland by the end of next year.

However, being first in 3G tops the agendas of Isle of Man government officials, who hope to use the distinction to attract more industry to the island. "In any race, whether it's the first man to the moon or the Indianapolis 500, everyone remembers who was first, but nobody remembers who was second," Craine says. "From that point of view, being first is very important to us."

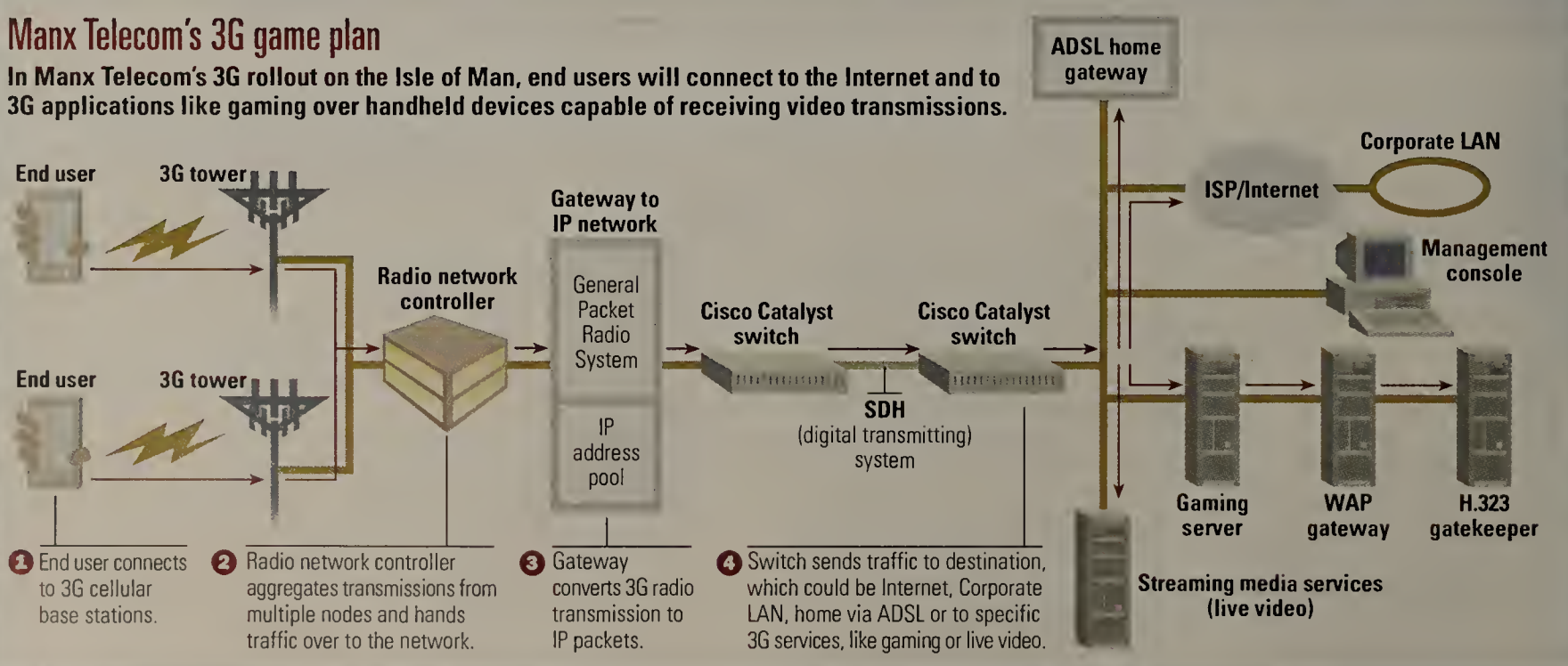
Rosen is chief strategist with Impact Video Communication in San Francisco and the author of Personal Videoconferencing. *He can be reached at erosen@impactvid.com.*

Early man

The Isle of Man, a 227-square mile self-governing territory of the British crown, boasts a history of firsts. Women got the right to vote on the island in 1866, more than a half century before women's suffrage in the U.S. or the U.K. Manx Radio, the first commercial radio station in the British Isles, began broadcasting on the Isle of Man in 1964. With a cluster of offshore financial services companies requiring broadband services, British Telecom views the island as an ideal test bed for its latest and greatest telecommunications products. British Telecom's Manx Telecom introduced asymmetric DSL service on the Isle of Man before any other British Telecom service area, and Isle of Man residents and businesses also got an early start using ISDN.

Manx Telecom's 3G game plan

In Manx Telecom's 3G rollout on the Isle of Man, end users will connect to the Internet and to 3G applications like gaming over handheld devices capable of receiving video transmissions.



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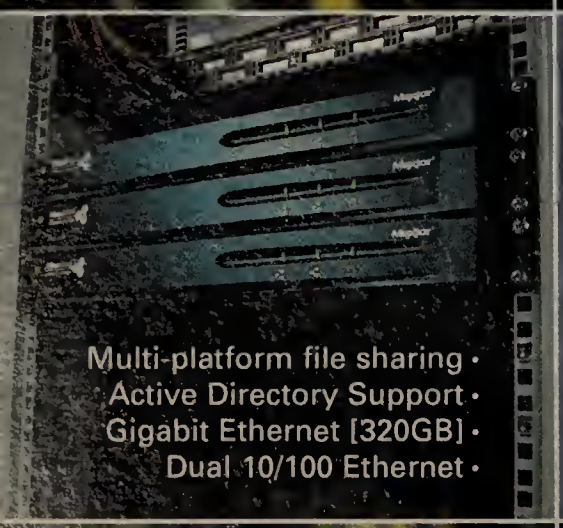

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NetworkWorld REVIEW Server

The LP2000r packs a punch

Hewlett-Packard's 2U server puts a lot of power into a small package.

BY JOHN BASS,
NETWORK WORLD GLOBAL TEST ALLIANCE

Hewlett-Packard's LP2000r packs a lot of power into a 2U space, with six drives and two 933-MHz Pentium III processors. The unit, which began shipping in April, scored high enough in our tests to be a strong contender in the battle at the top of the two-processor rack-optimized server space.

Performance

The LP2000r scored well in our file size, CPU database and network I/O tests. We used new benchmarks with this server, leaving us with no servers to compare with because the older benchmarks were used in previous tests.

However, comparing the Dell 6400 with four 700-MHz Pentium III Xeon processors reviewed last November, the two-way HP delivers 93% of the Dell's four-way performance, according to our CPU tests. Looking at the results against Windows 2000, the LP2000r delivers 67% of the Dell's performance, which is not bad for a two-processor machine.

Features

Our LP2000r came with two 933-MHz Pentium III processors, 1G byte of RAM, six 18G-byte hard drives, an HP NetRAID 2M RAID controller, two embedded Intel Pro100+ Ethernet network interface cards and one Intel Pro1000 Gigabit Ethernet PCI NIC.

The six hard drives are plugged into two three-slot drive cages. The drive carriers allowed the hard drives to be swapped without a hitch.

The two hard drive cages can be connected to different SCSI controllers or plugged into the same SCSI controller. The one we tested came configured with the two drive cages connected to both ports of the NetRAID RAID controller.

The RAID controller configured the first drive in the left drive cage to be the operating system partition. The remaining five drives were configured into two RAID-zero stripe sets for the data partitions.

The LP2000r has two Symbios SCSI controllers on the motherboard. Neither of the SCSI controllers on the motherboard were used, but one SCSI controller was connected to an external SCSI port on the back of the server. We would have liked to have seen the addition of hot-swap PCI slots and key locks on the chassis.

Availability

The availability features of the server are adequate. The server supports two redundant load-balancing power supplies that can be removed from outside the chassis without having to open the chassis. Our LP2000r came with one power supply. The NICs can be configured in a redundant failover arrangement to make the server tolerant of a NIC failure. The LP2000r has hot-swappable hard drives to replace a failed drive. Again, we would have liked to have seen some hot-plug PCI slots.

While the layout of the internal parts is good, upgrading or fixing the server could be difficult. The major components of the server can be accessed via the top cover without using tools, but internal cabling and the fit between components can make removing and adding components a challenge.

For example, we could remove the PCI cage, get to the PCI cards and reinstall the PCI cage, but not without a few problems.

When adding, removing or swapping a PCI card, a piece of sheet metal with a large fan mounted on it for cooling the system RAM and processors had to be removed, and then we could get to the PCI cage. The first time we removed the PCI cage it took a few minutes to figure out how to unplug it from the motherboard. Then we had to juggle the parts we removed to get to the PCI cage. Reinstalling the PCI cage was also a challenge. It took a few attempts to line up the metal guides to slide the unit back in place.

Racking the server, on the other hand, is much easier. All LP2000rs ship with hardware to mount the server in a two-post or four-post rack. This can be an advantage when the type of rack the server will be mounted in isn't known. As a bonus, the rack rails mount to a four-post rack without tools.

In addition to the ease of installation into a rack, the LP2000r has a relatively small chassis. Rack dimensions define the height and width of 2U servers, but depth is not as clearly defined. The LP2000r is only 24 inches deep — about 4 inches shorter than some other 2U servers we have seen. A short chassis depth can make it easier to service the unit in the rack.

LP2000r performance

Sequential transaction type, read/write, 8K-byte block

User load	Windows NT 4.0 TPS	Windows 2000 TPS	NetWare TPS
1	9.43	9.09	5.99
5	46.51	44.62	28
10	90.58	87.68	53.56
15	122.21	115.59	72.92
20	138.26	136.36	90.34
25	129.21	162.02	102.03
30	132.24	151.85	111.19
35	120.64	161.21	114.64
40	116.75	161.53	117.66
45	104.69	163.29	117.94
50	106.73	164.28	118.78

TPS = transactions per second

Manageability

The LP2000r had good manageability, as it ships with HP's Top Tools software for managing the server. It includes hooks to the major management platforms such as Tivoli Systems, CA Unicenter and OpenView.

The LP2000r has hardware on the motherboard to allow for remote reboot over the LAN. HP also includes ManageX software to manage system alerts; HP Instant Support to provide automated troubleshooting; PC Anywhere for accessing the server console remotely; and HP Navigator — an operating system installation aid and hardware diagnostic utilities.

HP Navigator is somewhat cumbersome to use. Its implementation of the NetWare installation aid is no more than a driver-disk creation wizard. It doesn't automatically coordinate the installation of the operating system and the hardware drivers. The management platform and utilities are good, but a more unified approach would be an improvement.

See **Review,** page 42

NetResults

LP2000r

SCORE: 4.30 **COMPANY:** Hewlett-Packard (800) 307-6397 http://netserver.hp.com/products/highlights_lp2000r.asp **COST:** (as tested): $11,920
PROS: Small and powerful **CONS:** Difficult to service, no hot-swap PCI slots

	Performance 40%	Features 30%	Manageability 20%	Serviceability 10%	Total score
HP LP2000r	5	4	4	3	4.30

SCORING KEY: 5: Exceptional showing in this category. Couldn't be better. May define the standard for excellence in this category. **4:** A very good showing in this category. Although there may have been room for improvement, this product was much better than average. **3:** An average showing in this category. The product was neither especially good nor exceptionally bad. **2:** A below average showing in this category. The product lacked some features or had lower performance than other products, or than was expected from a product in this category. **1:** Considerably sub-par, or lacking features being reviewed. A 1 is the lowest score that can be awarded.

Continued from page 41

Conclusion

The HP LP2000r is a fine, rack-optimized, performance-oriented server with good features and manageability. The LP2000r would be a good choice for a Web server or file server in an enterprise network.

Server testing is performed at North Carolina State University's Centennial Networking Labs (CNL) in Raleigh, N.C. CNL tests network equipment and network-attached devices for interoperability and performance.

Bass, a senior technical staff member at CNL and co-author of McGraw Hill's Building Cisco Multilayer Switched Networks, *designs and leads the execution of the test suites. He can be reached at john_bass@ncsu.edu.*

Bass is also a member of the Network World Global Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review.

FEATURE and CONFIGURATION TABLE

VENDOR / PRODUCT	HP LP2000R
Price (as tested)	$11,920
Processor type	933-MHz with 256M bytes Level 2 cache
Number of processors	2
Total number of processors supported	2
Memory configuration	1G byte (four 256M-byte DIMMs)
Number of RAM slots	4
Expansion slots present	3 (33MHz 64-bit)
Expansion slots available	1
Disk controller	HP NetRAID 2M (64-bit PCI card); 64M bytes of battery-backed writeback cache; Two Channels of Ultra 3 SCSI; Two Channels of Ultra3 SCSI on motherboard.
Hard disk description	Five 18G-byte 15K rpm (for data partition); One 18G-byte 10K rpm (for NOS partition).
Number and description of hard disk bays	6 hot-swap drive slots
Hard disk backplane	External storage; can split backplane into two SCSI channels.
CD-ROM	48X EIDE
Network interface	Intel 1000baseSX (Intel Pro1000) PCI NIC; two 10/100 Intel Pro100+ NICs.
Availability features	MSCS; hot-swap storage; autoserver restart; ECC RAM; dual embedded NICs; redundant power supplies; duplex hard-drive backplane.
Manageability features	Remote restart hardware on motherboard; integrated serial port management; top tools management; hooks to major platforms.
Security features	Start-up password; enable or disable serial port; flexible disk drives; writes to flexible disk drives; CD-ROM; and hard-drive boot.
Bundled software	Top Tools; Navigator diagnostic utilities; ManageX — policies for alarms; PC Anywhere; HP Instant Support (automated troubleshooting).
Warranty	30-year, next-day, on-site (parts and labor)

How we did it

Our test bed consists of 13 clients with a minimum configuration of two 400-MHz Pentium II processors with 128M bytes of RAM. Each client has one 100M bit/sec Ethernet network interface card for connection to a Cisco 2948G Ethernet switch. The server under test is connected to a Gigabit Ethernet Port of the switch.

We used Quest's Benchmark Factory software to coordinate the test development, client load, result gathering and archiving for all the tests. We ran a series of file, network and database tests against Windows NT 4.0, Windows 2000 and Novell NetWare 5.1.

Using the Benchmark Factory software, we defined several tests to look at the performance of the file subsystem.

For the small file transfer tests, we used a three-dimensional test matrix of transfer direction (read/write), block size (1K/8K byte), and transaction type (random/sequential). This test matrix resulted in eight tests. We separated all combinations into individual tests to see how each server would react in each situation. The small file transfer tests used a file size mix of 80% 1K-byte file, 10% 10K-byte files and 10% 50K-byte files.

For the large file transfer tests, we combined the reads and writes together in the same tests. We then created a set of tests that covered all combinations of the transfer type (random/sequential), and block size (1K/8K byte). This resulted in four tests. The reads and writes were combined in order to emulate large file service behavior for services such as FTP and home space services. The reads and writes were distributed as 90% reads and 10% writes. For each of the large file transfer tests, the file size distribution was 80% 500K-byte files and 20% 1M-byte files. Ninety percent of each of the file sizes were reads and 10% were writes.

Each of the files needed for each virtual user was created at the beginning of each test. Each test ran five iterations of increasing load. The number of virtual users started on each client controlled the load. The number of virtual users for each step was determined by running each of the tests against each network operating system to find where the knee of the performance curve lay. From there, we determined a standard set of load parameters to run the tests.

The CPU database test used Microsoft SQL Server 7.0 with NT and Win 2000. We increased the number of virtual users from two to 30. The number of virtual users in no way implies a limitation the database server. Each virtual user in our test is atypical of a 'real world' user in that the load generated by these virtual users is much larger. Each virtual user calls a computationally heavy SQL statement, thus reducing the number of network transactions per unit time, to concentrate the load on the processors. The virtual users then waited 9 seconds before executing the SQL statement again.

We used another database test employing a much less intensive transaction to test the network I/O performance of the server. This was achieved by generating a large amount of transactions against the server. Like the CPU database test, the number of virtual users is increased from two to 30 to obtain a performance curve.

To test this server's performance in a NetWare environment, we ran similar CPU and network tests against an Oracle8i database running on NetWare 5.1.

ONLINE: For more performance results, head to www.nwfusion.com, **DocFinder: 5425**

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NetworkWorld REVIEW Security

Put a Bouncer at your network's door

MDD's Password Bouncer helps network managers enforce strong password policies.

BY MANDY ANDRESS

Passwords. Annoying to users and one of the biggest security issues for administrators.

Because passwords are the lone level of protection against unauthorized access on most systems, their use is essential and the selection of strong passwords is required. Even though the importance of passwords is well-known and often communicated to users with password policies and security awareness programs, enforcing password selection policies, especially at the operating system level, has been difficult. MDD's Password Bouncer helps solve this problem by providing a way to seamlessly enforce strong password policies on a Windows NT or 2000 network.

Password Bouncer is an effective solution. It is easy to install, simple to configure and doesn't add any undue burden to users. It sits on the domain controller as a Dynamic Link Library (DLL) and uses a management graphical user interface to create and modify password policies. To enforce strong password policies, Password Bouncer lets administrators require mixed-case letters, numbers or special characters in specific positions, and reject palindromes and passwords that include user names. Password Bouncer also contains a 300,000-word English dictionary and 4,000-word list of proper names that can be checked during the password creation process (an upcoming edition will provide multilanguage dictionary files). Any password that is found in either of these lists is rejected. Because users are creating stronger passwords, there is a good probability they will just write them down or forget them more often. Password Bouncer does not address these issues; they need to be dealt with at a policy level in organizations. Users need to become accustomed to selecting strong passwords. When they do, it will just become second nature to them.

Components

Password Bouncer includes three main components: the client, the service and the DLL. The three work together to deploy and enforce strong password policies. The client is the management interface that is used to obtain licenses, configure password policy and send requests to the service to publish the new password policy to all domain controllers. The service, which can run on any Win 2000 or NT workstation, member server or domain controller (and must run under a domain administrator account), updates the password policy on all domain controllers. The DLL sits on each domain controller and enforces the password policy each time a user's password is reset.

Installation of Password Bouncer was very simple. The program can either be installed completely on the domain controller, or the client and service can be installed on a different system for easier administrative access. Using a standard Windows installer, the entire process took about 10 minutes. During installation, you can choose the domains you want protected. Multiple domains can be protected, but the appropriate trust relationships must be in place for multidomain coverage.

After copying the DLL files and rebooting the domain controllers, you can then define the password policy. Password Bouncer extends and strengthens the existing Win 2000 or NT password policy. For example, with Win 2000, the domain password policy requires a password to have at least three of the four following characteristics: upper case, lower case, numeric and special character. Password Bouncer extends this policy by letting administrators specify the position of these characters within the password. Once this policy is defined (or subsequently modified), the service will update the domain controllers every 24 hours.

After installation, Password Bouncer takes effect on the next password change. If a user selects a password that does not adhere to the implemented password policy, he receives an error message. This error message does not provide much help to the user. Another product, Password Policy Enforcer by TP Information Systems, lets administrators customize error messages to help users understand why their password is not valid. Having this feature on Password Bouncer would greatly improve its usability.

Password Bouncer also only allows one password policy for all accounts over all domains being protected. Password Policy Enforcer allows multiple policies for domains, and Password Bouncer should also include this feature. Some accounts are more sensitive than others and require a strong password policy. If you used Password Bouncer to enforce all password requirements, you would require all accounts to use the stronger password policy, which may not be necessary for all users.

Although Password Bouncer is effective in enforcing a strong password policy, it adds a bit of delay in the password change process. This process is not critical, so a delay of a few seconds is not that great of an inconvenience. Additionally, any service accounts or scripted passwords need to be analyzed and changed to adhere to the new password policy.

Even though the installation process is simple, the server reboot and changes in password policy implemented by this product may require careful planning and user education. The Password Bouncer documentation is surprisingly thorough and includes a step-by-step process to help deploy Password Bouncer throughout the company.

Conclusion

Password Bouncer is an excellent tool to help enforce a strong password policy across a company. At $1,000 for an unlimited number of users, it is one of the most cost-effective security solutions. This is certainly money well spent because recovering from a security breach due to a "cracked" password would certainly cost more than $1,000. While Password Bouncer works well, a few feature changes, such as customizable error messages and support for multiple password policies would make its enterprise functionality that much greater.

Andress is president of ArcSec Technologies, a security consulting firm. Her book, Surviving Security, was recently published. She can be reached at mandy@arcsec.com.

NetResults

Password Bouncer 1.0

SCORE: 4.35 COMPANY: MDD (800) 609-8610, www.mddinc.com **COST:** $995 for unlimited users. **PROS:** Easy to install; no client configuration required. **CONS:** Can't customize error messages; can't have multiple policies; requires domain controller reboot.

	Effectiveness 25%	Ease of use 20%	Features 20%	Installation 20%	Cost 10%	Documentation 5%	Total score
Password Bouncer	5	4	3	5	5	4	4.35

SCORING KEY: 5: Exceptional showing in this category. Couldn't be better. May define the standard for excellence in this category. **4:** A very good showing in this category Although there may have been room for improvement, this product was much better than average. **3:** An average showing in this category. The product was neither especially good nor exceptionally bad. **2:** A below average showing in this category. The product lacked some features or had lower performance than other products, or than was expected from a product in this category. **1:** Considerably sub-par, or lacking features being reviewed. A 1 is the lowest score that can be awarded.

How we did it We installed Password Bouncer on a Pentium III 700-MHz machine with 256M bytes of RAM and running Windows 2000 Professional system for use in protecting a Win 2000 domain with 10 systems, 20 users and one domain controller. We created an initial password policy during installation and created new user accounts and changed the passwords of existing user accounts to ensure the password policy was being enforced. We tried passwords that did not adhere to the policy to make sure they would be rejected and created passwords that fit the policy to make sure they were accepted. We then changed the password policy using the management interface and performed the same tests as those mentioned above to ensure the changes in the password policy were deployed.

Management Strategies

Career Development, Project Management, Business Justification

Is free IT training really a bargain?

While free educational opportunities abound, experts warn of shallow offerings and camouflaged sales pitches.

JIM FRASIER

BY PAUL MCNAMARA

There's boatload of free technical training out there for the asking. And in these days of shrinking IT budgets, the temptation to partake — some might say the necessity — can appear compelling.

But what would you be getting in the bargain? Are these freebies a good opportunity to improve your network expertise — or that of an underling — at a price that can't be beat? Or are they simply confirmation of the old cliché about getting what you pay for?

The consensus among IT professionals leans heavily toward the latter: skepticism, bordering on contempt. However, some say a savvy student can find gems among the freebies, especially if you know where to look.

First the doubters, though: "Good quality learning material costs a lot to produce, and I don't trust the cheap and/or free stuff," says David Byrkit, a self-employed computer consultant/trainer in Peoria, Ill., who recently left a job as a corporate e-mail administrator.

"Anyone who thinks a half day or even full day of [free] training is going to expand their technical horizon is just looking for time away from their holding cell," adds Robert Haas, a system engineer at SBC Communications in Cleveland.

Those who still want to rummage through the freebie bin should be careful deciding where to invest their energies. "If you understand the underlying sales motive, and separate the hype from the basic overview content, then you can extract some value," says Walter Adams, a former senior manager at UUNET.

Scott Turton, a consultant and proprietor of the computer training Web site www.intelinfo.com, says, "Some of the best free IT training opportunities on the Web are comparable to the paid training."

The one big difference is the opportunity to ask your questions and get them answered by a dedicated teacher or mentor. "You can ask your questions to many of the free technical help Web sites, but there is no guarantee you'll get the most correct answer, or even an answer that appropriately fits your questions," he says.

Not all free IT training is created equal. "There is a wide variation in the quality of what is available for free," says Turton, whose site averages 3,700 visitors per day. "As a rule of thumb, the more entrenched the company is into the Internet and Web, the better their offerings are for free training."

Some of the best bets are to be found among the household names such as 3Com, Compaq, Hewlett-Packard, IBM, Intel and Microsoft, he says, although you may have to comb through the sites to find good free material.

Turton also recommends a number of sites that specialize in IT training tutorials: Trainingtools.com, W3Schools.com, Wdvl.com, Learnthat.com, barnesandnobleuniversity.com and "Web Monkey" at www.hotwired.com/webmonkey.

Also, there are countless sites devoted to certification preparation, many of which offer free material, or at least free samples of test questions.

"Some of the best ones are ITTutor.com, MCSE Guide.com, MCMCSE.com, GoCertify.com, 2000exams. com, and 2000trainers.com," Turton says. He also recommends single-topic sites that "specialize in specific areas, such as Oracle, Java, Visual Basic, HTML and XML. Many of these single-topic types of sites have surprisingly good content."

Whether they're good enough to raise the technical proficiency of your staff — or buff up your resume — may be another matter. "People do pass the certification exams just by studying the free material, but it is difficult," Turton cautions. "You really need a mentor — or at least ask questions to experts in the free forums — and be very self motivated."

"Observe how your employees use training of any kind," recommends Larry Horn, a former network manager who is between jobs in Jackson, Miss. "If they use it well, then even the throw-away freebies may be useful. If they don't use training well, don't waste the time, whether free or paid."

Some say there's simply no escaping the stigma associated with "free." "I've both attended and presented free training," says Dave Shaw, director of business development at T-Soft, a network management software vendor in Forest Hill, Md. "I'm not a big believer in the concept after those experiences."

"On the presenting side, I went through several years of trying to train resellers on the product I was supporting at the time," he says. "Free training was a disaster, primarily because those who signed up to attend — or were assigned to attend — very often failed to attend."

The problem reached such proportions that his company decided a strategy change was in order: the freebies were scrapped.

"Instead we'd quote a number like $1,000 per student and discount that considerably in most cases," he says. "Customer organizations would howl like we were asking them to donate a major organ. But registrations went up and we'd get an 80% attendance rate. The customer would receive value for the money spent."

Even those who speak more highly of free training warn of the importance to keep your expectations in check.

"The best of the freebies *can* be adequate if the student is self motivated, has some background already in the subject, or knows where he can ask questions and get answers," Turton concludes. "In general, though, it is better to pay for training — if you or your employer can afford it." ◪

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Just this summer, the 35-year-ald infarmation technalagy cansulting campany farmed a Diversity Task Farce invalving emplayees fram business units in the United States and the United Kingdom. Betty Black, Diversity Task Farce team leader and director af employee and arganizational develapment, says the committee will review **Keane's** policies, pracedures and management practices. It's part af an averall effart ta demanstrate that **Keane** values and leverages the individual and cultural diversity af all emplayees and is recognized as an emplayer af choice in aur industry. "We believe this effart will allow the company to imprave persanal career appartunities and retain superior talent," Black says. "We knaw that we need to leverage the creativity and innavation of every person here and suppart aur multicultural client base."

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BDPA CONFERENCE AUGUST 15-19

The Black Data Processing Associates – BDPA – will host its 23rd annual National Conference Aug. 15-19 at the Sheraton Hotel & Towers in Chicago, IL.

BDPA's conference provides professional growth and technical development opportunities to high school and college students, as well as IT professionals and senior managers, entrepreneurs, government agencies, educational institutions and corporations. The conference provides sessions on technology trends, business skills, management training and IT skill development. The conference includes an opportunity for employers, career professionals, students and career seekers to network; educational institutions and government agencies to explore IT opportunities for professional growth; as well as technical development.

BDPA representatives say that despite the economic downturn and continuous corporate "rightsizing", the demand for IT professionals continues. Already computer literacy is listed as a job requirement vs. a differentiator, and it's estimated that more than 1 million IT jobs will exist by 2003.

The Black Data Processing Associates is a national nonprofit organization that provides professional development programs and services to position its members at the forefront of the IT industry. **BDPA** was founded in Philadelphia, PA, in 1975. Today, there are over 40 chapters throughout the country. From Boston to Los Angeles, Seattle to Miami, there are over 2,500 active members with a passion for filling the IT pipeline with qualified candidates, as well as bridging all aspects of the digital divide.

BDPA is a member-focused organization committed to providing IT training, career opportunities and mentoring to the minority community. Membership is open to the full range of age groups, from high school students with career aspirations in IT to highly qualified technicians and senior executive managers. As a result, the membership and its vision span "from classroom to boardroom," according to Reginald J. Gardner, National **BDPA** Conference director.

Membership is open to all with an interest in the IT industry, regardless of race, sex, religious beliefs, or national origin. **BDPA** has successfully reached out to many, and has provided opportunities through networking, educational programs, monthly seminars, monthly workshops, and annual conferences.

Educational and technical opportunities still reach minority communities at a slow pace. **BDPA** has a larger task and broader range of people (especially youth) to reach. Recognizing the need for accelerated action, **BDPA** works to increase the number of computer literate teens in the inner city by offering a challenging, competitive, esteem building, state-of-the-art program that will train youth in today's technology.

At the local level, each chapter conducts a High School Computer Competition Program. High school students are taught computer skills and business acumen that help them land summer jobs and internships. In addition to the Computer Competition Program, the students have the opportunity to qualify for representing their local chapter on the High School Computer Competition Team. One of the highlights of the annual BDPA national conference is a competition between high school teams displaying talent in the latest technology. The competition consists of programming, oral presentation and team building skills. During the past year, over 600 high school students have been trained in Microsoft, Java and Web design.

For the IT professional looking to enhance technical and managerial skills, there are a number of classes offered. In addition, there are monthly program meetings with top-notch presenters. Presenters range from certified technicians (Microsoft certified, Quality Assurance certified, Project Management certified, etc.) to senior managers, directors and CIOs of local supporting companies.

For IT managers working their way up the corporate-ladder to senior management, there are formal mentoring opportunities available. Throughout Corporate America, a number of minority senior level executives give their time to provide mentoring and coaching to IT middle managers.

Where resources are available, Computer Technology Centers are being developed. The majority of classes take place at Computer Learning Centers or public school facilities. In some cases, classes are held on college campuses. **BDPA** is now working in conjunction with public school systems and major corporations to create Technology Centers where adults and teens alike can come to hone their existing skills, as well as learn new skills.

For more information on **BDPA** and the upcoming conference, contact **BDPA** at our web site www.bdpa.org.

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MPLS,
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Engineering Task Force (IETF), a standards-setting body that developed MPLS. In fact, MPLS is on the agenda at an IETF meeting being held this week in London.

The IETF is split between critics and fans of MPLS. The strongest advocates include Cisco and Juniper Networks, which argue that MPLS-based VPNs offer adequate security and are less expensive to deploy than alternatives favored by Bush and Bellovin.

MPLS is a protocol that lets carriers merge various types of data traffic, including frame relay and ATM, over one backbone running IP. MPLS supplements the Internet's best-effort approach to delivering communications with differentiated classes of service.

Finalized by the IETF in 1999, MPLS is being deployed by several service providers, including AT&T, which uses the protocol to support an IP-enabled frame relay service. The controversial MPLS VPNs are in use by companies such as IBM Canada and Canadian Life Assurance that want to outsource the management of their VPNs.

Critics Bush and Bellovin claim MPLS is unnecessary because carriers can run frame relay or ATM traffic directly over an Internet backbone.

"If I have a pure IP core, I don't need MPLS," Bush says.

While these IETF leaders don't like MPLS, they aim their strongest criticism at MPLS VPNs. In particular, they denounce a technique for creating MPLS VPNs that was outlined in an IETF informational document — called RFC 2547 — published in 1999 by two Cisco engineers.

"MPLS is a social disease, but it won't kill us," Bush says. "RFC 2547 VPNs are deadly. They will not scale to what the Internet needs five years from now. They will break your network."

RFC 2547 outlines a technique for using the Border Gateway Protocol (BGP), which runs on the Internet's backbone routers, to propagate information about MPLS VPNs. With this approach, ISPs must manage a special BGP routing table for each MPLS VPN and store parts of that routing table at every location where the VPN is accessed.

Today, most ISPs manage one BGP routing table, which is already a difficult task and becoming more unwieldy as the number of entries in the master table grows.

"For network operators the issue is: I'm having trouble managing one routing table, and you want me to run thousands of them?" Bush says.

To help address this scaling problem, Juniper has developed an alternative to RFC 2547 that pushes management of the special VPN routing tables out to customers. This type of MPLS VPN is supported by Juniper in a product called MPLS Circuit Cross Connect, and Juniper has pitched the idea to the IETF as a potential standard.

Cisco has a similar offering that it also proposed to the IETF.

The new Cisco and Juniper approaches let MPLS VPNs be established at Layer 2 of the Open Systems Interconnection's seven-layer structure, instead of Layer 3 as outlined in RFC 2547. These VPNs are designed to send legacy traffic such as frame relay and ATM over MPLS.

Bush acknowledges the Layer 2 MPLS VPNs have fewer scalability problems than the original Layer 3 ones.

But Bellovin outlines several security risks with both types. Because the information is not automatically encrypted, information sent to the wrong person can be read by that person. MPLS VPNs also are susceptible to leaked traffic if a connection is disrupted, he says.

"MPLS VPNs have very bad failure modes," Bellovin says. "The end points are set up by the service provider so the corporate customer doesn't have control."

Bellovin prefers VPNs using IP Security (IPSec), an IETF-developed tunneling technology with built-in encryption. With IPSec, if a communication is sent to the wrong person, that person can't read it. And IPSec causes less stress on the Internet's backbone routers because customers handle provisioning.

Bush and Bellovin are not alone in expressing concern about the security and scalability of MPLS VPNs.

"RFC 2547 is a nightmare of unprecedented proportion," says Vijay Gill, a senior network architect at Metromedia Fiber Networks. Like Bush, Gill prefers Layer 2 MPLS VPNs because "they're much simpler and we won't have to deal with customer routing tables."

Thomas Nolle, president of CIMI, predicts that MPLS VPNs running over the Internet will fail to gain widespread use. However, he says MPLS VPNs running on separate dedicated IP networks — such as AT&T's offering — can be made more secure and might succeed.

"Any large organization that is looking at MPLS VPNs as a substitute for frame relay or for encrypted tunnels should assume right now that the state of the technology will not support them," Nolle says.

MPLS VPNs also have their fans.

Cisco Fellow Bruce Davie says MPLS VPNs based on RFC 2547 are more scalable and just as secure as VPNs using frame relay or ATM. He also says the amount of configuration involved with RFC 2547 VPNs is less than that of IPSec VPNs, but that this burden is carried by ISPs, not customers.

"MPLS-based VPNs are significantly less expensive to deploy than IPSec VPNs," he says.

As far as security is concerned, Davie says "millions of people are quite happy with the level of security in frame relay, and MPLS provides comparable security."

A company that is concerned about security can encrypt its data before sending it over an MPLS VPN, Davie adds.

However, Davie confirms Cisco is developing an encapsulation technology called Universal Transport Interface that will let network managers send frame relay or ATM packets directly over IP without MPLS.

At its heart, this debate over MPLS VPNs is philosophical.

Internet engineers such as Bush and Bellovin favor keeping the Internet's backbone simple and dumb, while putting the complexity and intelligence at the edges of the network and at customer sites. MPLS flies in the face of that approach.

Telephone service providers, on the other hand, are used to a more centralized approach to provisioning services and a smarter backbone. They like MPLS because it is closer to traditional data communications technologies such as frame relay and ATM.

"MPLS is a big deviation from the Internet architecture, and some people think it should be stopped at all costs," Davie says.

MPLS VPNs explained

Critics outline problems with two types of MPLS VPNs.

Type	Scaling problems	Security problems
Layer 3	ISPs must manage a routing table for each VPN and store parts of that table at every site where the VPN is accessed.	Has no encryption built in. Underlying MPLS architecture poses a risk for data spills.
Layer 2	Resolves the scaling problem by having customers manage their own routing tables.	Has no encryption built in. Underlying MPLS architecture poses a risk for data spills.

SIMPLE,
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suite of integrated communications services that includes telephone calls, voice mail and Web conferencing.

For example, with SIMPLE, an end user could arrange a telephone call with another person when that person is off the phone.

"This integration between presence, instant messaging and traditional telephone communications is the single-largest reason why it makes sense for an enterprise to build a SIP-based architecture," Schulzrinne says. "Presence beats call waiting, and instant messages can work in conjunction with a phone call."

The SIMPLE working group will meet this week in London to debate a few remaining technical issues, including how to set up communications for large messages and multimedia, and how users will authorize the release of their presence information to other subscribers.

Members of the SIMPLE working group hope to finalize the protocol this fall and submit it to the IETF leadership for approval as a standards-track document before year's end.

Meanwhile, the IETF also is wrapping up its work on a common message format that can be used to ensure communications between applications based on SIMPLE and alternative protocols.

"There is still value in having the common format because not all systems have gone with the SIP/SIMPLE approach," says Leslie Daigle, co-chair of the IETF's Instant Messaging and Presence Protocol working group. "Indeed, there are other systems out there today."

Lotus' SameTime uses proprietary instant messaging technology, but company officials are committed to supporting industry standards. Two concerns that Lotus has about SIMPLE are how it handles security between service provider networks and how the privacy of presence information is protected.

"The security aspects are extremely important to enterprises. We need to make sure those are properly dealt with," Starkey says. "We also need to have user-level control so that presence information is only available to certain people."

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Backspin

The 'Net is strategically important

"A cynic knows the cost of everything and the value of nothing."

— Oscar Wilde

MARK GIBBS

Faithful reader Jim McQuaid wrote regarding last week's column, in which I chastised the government for not being concerned about carriers grouping important Internet links in a tunnel in Baltimore where they were knocked out by a fire: "The Internet links running through that tunnel are not a U.S. government resource, but a private one. The market is a better driver for securing redundancy and robustness in the Internet than, say, having a government agency own and run it.... Be careful what you wish for on this one."

The problem is the market that Mr. McQuaid refers to isn't one that demands top-level service, it simply asks for some acceptable level of performance with acceptable reliability at an acceptable price. Thus, the carriers wind up all using the same tunnel for their cables because to get from Point A to Point B the price of using the tunnel was right given the revenue opportunity.

In the context of Internet communications, market forces conspire to give us tactically optimum solutions rather than strategically best solutions. We get an Internet that works acceptably well in general but can be taken out by a train accident.

Now, this raises the question of what the value of the Internet really is. Is it a communication system of national importance like the telephone network? Is it strategically valuable like the railroads and the road system, or is it more like the radio networks — valuable in times of emergency but otherwise tactical?

Now, to those of us who have watched, analyzed and lived the Internet, this seems a silly question. Of course it is strategic. Just look at the impact the 'Net has had on the U.S. economy. It has created jobs, built companies and defined new industries. Just look at the impact on information flow and academia, on personal relationships and business dealings.

And before you say, "Ah, don't forget the dot bombs!" While it is true that the dot bombs caused tremendous damage and continue to do so, that has nothing to do with the 'Net. The 'Net is essentially above that. Long after the host of failed dot-coms has turned to accounting dust, the 'Net will still be there.

I don't want to sound metaphysical (a way of thinking I absolutely can't stand) but the 'Net has transcended technology. It has become a gestalt — something that is more than the sum of its parts. Just look at the 'Net's vital statistics. In every aspect it is enormous and has invaded and embedded itself in countless aspects of our business and personal lives.

Find me one company beyond mom and pop size that doesn't have a Web site or at the very least an e-mail address. Find me one person younger than 50 who hasn't at least heard the Internet discussed on television, on radio or in the barbershop. Find me a CEO who doesn't believe an Internet presence is really important or a state governor who isn't concerned about taxation of products bought and sold on the 'Net.

We have to face it. The 'Net is now part and parcel of our culture and strategically so. And along with that comes the specter of government control. The issue will be not whether legislation will happen but rather how broad and deep that legislation will become.

I suggest that we start to talk. Those of us who know the value of the Internet need to start telling those who don't know how much the 'Net matters and why. Start with your users, your CEOs, CFOs, customers, family and friends. Explain what the 'Net is and keep explaining.

And when the legislators start messing with the 'Net, make sure your voice is heard. Tell them that it is all about value.

Of course, you can always be heard at nwcolumn@gibbs.com.

'NET BUZZ

The latest on the Internet industry

PAUL MCNAMARA

There are two ways to look at last week's largely uneventful **Code Red** fire drill.

Either the episode was a sterling example of law enforcement joining hands with network professionals to ward off a worm that would otherwise have brought the Internet to its knees. (Even if that's a stretch, those of you who heeded the call and took appropriate steps to protect your borders deserve kudos for being on the ball.)

The other way to look at Code Red is that it was much ado about precious little. ... It was certainly much ado.

Blaming the media is always easy, cheap and fun — but in this case it also appears to be appropriate. TV's talking heads — no doubt emboldened by alarming **FBI** pronouncements — were so hysterical I half expected to see survivalists scrambling into their cobweb-infested Y2K bunkers.

Who's to say which characterization more accurately reflects reality? After all, no one can prove there would have been hell to pay had the warnings and media coverage been more measured.

This much appears certain, though: Dire warnings about imminent Internet catastrophe far outnumber actual instances of Internet catastrophe.

In fact, we're still waiting for the first example of the latter, aren't we?

Captains of the IT industry ought to be in good position to tell us when the worst of the economic downturn has passed.

3Com CEO Bruce Claflin took a stab at this fortune-telling — albeit a tentative stab — when he stopped by for a chat with *Network World* editors last week.

"I'm not sure I should say this because I'm not sure I believe it myself," Claflin said, glancing around the room conspiratorially. "I think we've found the bottom."

He made this pronouncement with the kind of conviction that leads one to wonder why he even bothered to say it.

The comment also brought to mind a recent quote attributed to **Sun CEO Scott McNealy.**

"I see a bottom every time I change my 1-year-old's diaper; that's the only sure bottom I know," McNealy was reported to have said in April.

More recently he told the *San Jose Mercury News*: "There's just no way to predict. Nobody saw the cliff, so how can you say you see the bottom?"

Do you ever suspect that everyone but you is using the Internet to land terrific travel bargains?

Well, maybe you're not missing all that much. A colleague received this real-life review of **Priceline.com** — the site that made William Shatner's singing career — in an e-mail from a D.C.-area friend who's planning to attend the colleague's wedding in Massachusetts two weeks hence.

"What are you guys doing this weekend? My lovely wife went to Priceline.com and, well, screwed it up. NEVER USE THIS WEB SITE, IT SUCKS. Anyway, we've got nonrefundable, nontransferable tickets for this weekend to fly up to Boston and before I throw them in the trash assuming you guys have a million things to do, I figured I'd check first."

Feel better now?

Granted, the "lovely wife" ordered these tickets for the wrong weekend, which isn't Priceline's fault. However, the anecdote drives home the potential hidden costs of buying cut-rate airline tickets from the likes of Priceline, which, by the way, posted its first-ever quarterly profit last week.

And then there's this postscript: The colleague's D.C. friends still have to buy two more plane tickets if they want to make the wedding.

So much for bargain hunting.

Have a point to make, an idea to suggest or a tip to offer? The address is buzz@nww.com.

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Source for competitor server prices: Respectve companies' web-based datasheets, 3/2001.

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